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History

SCIENCES

Interstate paving

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26 A new way to lay large pipe

30 Cable spinning for Throgs Neck Bridge

CONTRACTORS and ENGINEERS

A Battenheim Publication

MAGAZINE OF MODERN CONSTRUCTION

NOVEMBER 1960





Two courses of hot-mix Texaco Asphaltic Concrete, each two inches thick, were laid on the Asphalt Macadam foundation.

Applying Texaco Asphalt during construction of eight-inch Asphalt Penetration Macadam foundation on taxiway at New York International Airport.

Asphalt Contractor:

Metropolitan Asphalt Corporation



Heavy-duty Asphalt insures long service with low upkeep for New York International Airport taxiways

Taxiways used by the huge jet airliners constantly arriving and taking off at New York International Airport require a heavy-duty pavement. When six new taxiways were completed by The Port of New York Authority last year, Texaco Asphalt was used in the construction of both the foundation and the wearing surface. The result is a durable, resilient pavement, which will absorb heavy traffic year after year with a minimum of maintenance.

Each taxiway is 75 feet wide, with a 25-foot shoulder at each side. The taxiway itself has an 8-inch foundation of Texaco Asphalt Macadam, consisting of two 4-inch courses of crushed stone, each of which received an application of Texaco Asphalt Cement to fill the voids between the stone and form a highly durable, waterproof base. Over this was constructed a hot-mix Texaco Asphaltic Concrete wearing surface, laid in two courses, each two inches thick. Shoulders were surfaced with a single two-inch course of Texaco Asphaltic Concrete.

The type of asphalt construction used on these taxiways at New York International Airport is also ideally suited to heavily-traveled highways and streets, particularly Interstate Highways. In addition to its rugged durability and low upkeep cost, this pavement has a substantially lower initial cost than rigid paving designed for the same traffic load. It is speedily laid because it requires no time-consuming curing period. Thanks to its resilience and its freedom from expansion joints, it has a velvet-smooth riding quality, which appeals strongly to motorists.

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TEXACO ASPHALT

CONTRACTORS and ENGINEERS

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Teamwork by loader, scrapers. Page 16



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Big fill for industrial site. Page 74

COVER:

A closely knit paving spread puts down 9-inch pavement on Interstate 81 near Syracuse, N. Y. The mechanized train uses two Koehring 34-E pavers—one travelling forward and one in reverse—with Blaw-Knox and Jaeger spreaders and a Heltzel Flex-Plane float-finisher. Average daily production was 2,000 linear feet of 24-foot-wide pavement. Page 70.

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Editorial



Only in emergencies?

After Hurricane Donna hit the Florida Keys early in September, contractors in that area immediately rushed to repair the damage caused by 166-mph winds, torrential rains, and 5-foot tides that had swept over these low-lying islands. Overseas Highway U. S. 1, which ties these keys together from the Florida mainland to Key West, had been breached in six locations where the fill behind bridge abutments had been washed away. At another site, the superstructure of a bridge was knocked out completely by a vessel loose in the storm. The 16-inch U. S. Navy pipeline that supplies the keys with fresh water from the mainland was broken in half a dozen places.

Working in gale-force winds that still swept the coast, construction crews dug out their own equipment from the wreckage, and teamed up with State Road Department engineers to make U. S. 1 passable. Fill was trucked in from nearby pits to plug the washed-out embankments at the bridge abutments. Junked automobiles from scrap yards were even tossed in to help anchor the fill and close the gaps. Wreckage and rubble were pushed off the road.

Until Navy repair parties could restore the pipeline, potable water was hauled to the worst disaster areas in the drums of concrete truck mixers that had been hastily cleaned out. The bridge that lost its deck was put back in service by U. S. Army engineers with a Bailey span flown in from Fort Campbell, Ky. In three days, traffic on the Overseas Highway was open over the 60-mile stretch that was hardest hit, thus permitting the disaster crews to enter from the mainland.

Contractors and their personnel worked round the clock until the job was done. Official contracts were not even negotiated until communications were back to near normal. But no one complained. The construction workers did not rush north to the mainland as thousands of other residents and visitors to the keys had done. There was a job to be done, and they did it. Other construction crews acted likewise in cleaning up after such disasters as the

California earthquakes of March, 1957, or the floods that hit the Midwest just this past spring.

This good record of construction workers in national emergencies is in sharp contrast to the reports of dilatory tactics on the construction of bases for intercontinental ballistic missiles. Since America's crash program got under way in 1957, there have been sixty stoppages, walkouts, or strikes at Atlas and Titan sites. During the past two years, there have been 26 illegal secondary boycotts to delay construction. Yet many congressmen have been telling the unions concerned that they will vote in the next Congress to legalize secondary boycotts at all construction sites.

Apparently the urgency of our nation's high-priority defense program is not getting across to some of our lawmakers, union officials, or to the rank and file. Jurisdictional disputes over which union is going to do a certain type of work are common. Building trades unions and industrial unions are more concerned with battling each other than in uniting for the country's good. As a result, the craftsmanship of the "brick and mortar" phase of the job has been sloppy, and some of the work had to be replaced. Delays caused constant rescheduling, an involved operation that holds up the entire program.

In the meantime, the U. S. has but a few bases from which long-range weapons can be fired. At Presque Isle, Maine, are the air-breathing Snarks. Vandenberg Air Force Base in California has the liquid-fueled Atlas ICBM's, and some have been installed at Cheyenne, Wyo. None can yet be fired from protective underground silos. Such hard bases will not be ready until the middle of next year, and then only if there are no further delays.

This "crash" program apparently must take on the emergency aspect of such natural catastrophes as floods, earthquakes, or hurricanes before everyone involved will put forth his best efforts to complete the job. Our lawmakers, contractors, union officials, and construction workers need to realize wherein their duty lies.

CONTRACTORS and ENGINEERS

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CONTRACTORS AND ENGINEERS

Growth Policy

The federal-aid highway program continues to be administered in such a way as to spread the available work through all segments of the road-building industry.

Analysis of 3,762 road contracts awarded during the first half of 1960 reveals that:

- Contract amounts varied from as little as \$25,000 to almost \$15 million for a single contract, with the average cost at \$400,000.

- Forty-four per cent of the contracts were for less than \$100,000. Another 23 per cent were between \$100,000 and \$250,000.

- The contracts under \$1 million represented 90 per cent of the total number of contracts offered for bid.

The great bulk of highway contracts, therefore, were small enough to invite bidding by the numerous medium and small road builders spread across the nation. These are the contractors in whose interest Congress stipulated, in the 1956 highway law, that contracts should be let in a way that would "encourage and develop the actual and potential capacity of small business."

Distributing the available work among contractors of all sizes tends, also, to broaden the market for road-building machinery. In order to fulfill his contract, a contractor with modest resources must purchase or rent any equipment he lacks, even if he cannot hope to use it as efficiently as the very large contractor. The added equipment, in turn, acts as a spur to seeking more work. In this cycle, Congress' intention to develop the potential capacity of small construction businesses begins to be realized.

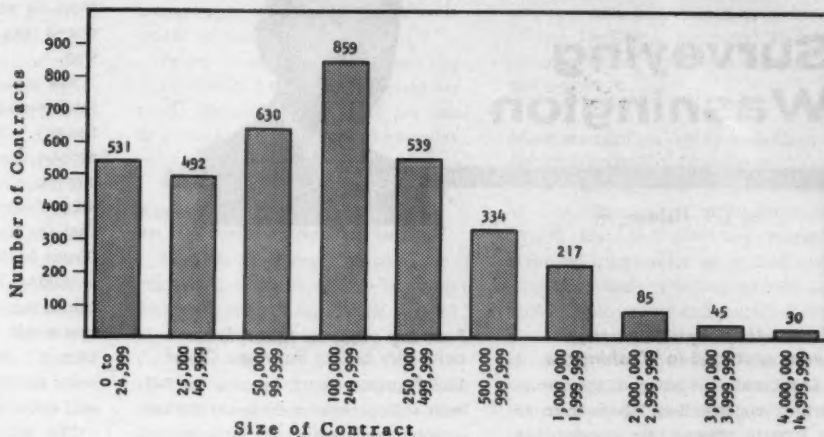
Altogether, 11,300 contractors are currently eligible to bid on state highway and bridge construction contracts, according to the Bureau of Public Roads. This includes contractors equipped to perform any type of road construction operation and many who limit their activity to particular phases of construction.

The operations of all but 1,710 of the eligible road-building contractors are confined to their home states. Some 919, or 8 per cent of the whole, are eligible to bid in two states. Some 330 can bid in three states. The remaining 461 contractors, representing 4 per cent of the 11,300 total, are active in more than three states. The average contractor among these large businesses is eligible to bid in seven states.

The Bureau of Public Roads has compiled this information on eligible contractors from qualifying lists maintained by the highway departments of the 50 states, the District of Columbia, and Puerto Rico. These lists include contractors currently qualified, licensed, or otherwise recognized as competent to bid on highway and bridge construction contracts.

SIZE OF FEDERAL-AID HIGHWAY CONTRACTS

(Report On Opening Of Bids On 3,762 Contracts Awarded During First Six Months, 1960)



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Surveying Washington

by E. E. Halmos, Jr.



Cases affecting construction under spotlight in Washington

Legal matters—many of them concerning construction labor—seem to be tops in interest for construction men this month, as Washington settled firmly into its pre-January legislative doldrums.

Developments ran this way:

1. A group of U.S. Supreme Court cases on labor and tax matters;
2. A series of National Labor Relations Board decisions and orders, most of them concentrated on the NLRB's dislike of hiring-hall arrangements;
3. Action by the Justice Department against a whole city for failure to comply with orders to clean up raw sewage discharges into a river—an action that could put teeth into the government's powers to order pollution-abatement construction;
4. Rulings by the Internal Revenue Service that appear certain to cause a rise in the cost of cement next year.

Four big cases on taxes, labor currently before Supreme Court

The Supreme Court, opening its fall term with an extremely heavy docket—more than 400 cases on opening day—had two labor matters and two tax cases that seemed of prime importance.

One of the labor cases (Docket No. 321) concerned the controversial "common situs" picketing, which labor tried—and failed—to get through legislation this year. Involved is Local 761 of the Electrical, Radio and Machine Workers union, suing to reverse an NLRB ruling that its picketing of General Electric's "Appliance Park" at Louisville was "common situs," and thus illegal. The company had designated one of the numerous gates to the site as an entrance for contractor personnel, but the union picketed all gates, though its dispute was with only one of a dozen or more contractors. A court held that the

picketing was not "common situs," since GE didn't "share" its site with the contractors, merely permitted them to work on it; but NLRB declared that picketing was illegal, anyway.

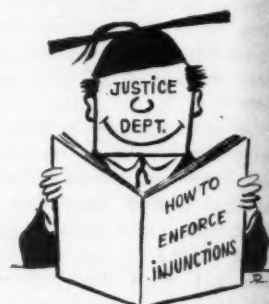
The other labor case concerns three joint ventures on the St. Lawrence Seaway. The issue here centers around the use of a hiring hall and clearance of applicants by an Operating Engineer local. NLRB's decision that the hiring-hall arrangement was illegal is not in dispute; the agency is asking reversal of a lower-court ruling that refunding union dues and fees would be "inappropriate and arbitrary." NLRB says this action by lower courts impairs its right to make and enforce rulings.

The tax cases involve an attempt by the state of Alabama to tax operations of a New York firm working for the Corps of Engineers in Mobile Bay; and attempts by the state of Michigan to tax Armco Steel on its gross receipts, regardless of how much of them was earned in Michigan. Both of these cases have real interest in view of congressional attempts to prohibit state taxation of out-of-state corporations under various conditions.

Number of NLRB decisions hits hiring halls, union clearances

The long string of NLRB orders and decisions continued to hammer home, in general, NLRB's opposition to use of hiring halls and union clearances.

In a specific labor case, NLRB late in October heard oral arguments for the first time, on the legality of an "agency shop" arrangement in a "right to work" state. The case concerns General Motors Corp., which refused to sign an "agency shop" agreement for its plants in Indiana. The company position is that state law forbids arrangements requiring union membership; thus, signing an agreement demanded by the union (requiring employees not belonging to a union to pay sums equal to union dues in order to obtain and hold jobs) would be a violation of the Taft-Hartley Act.



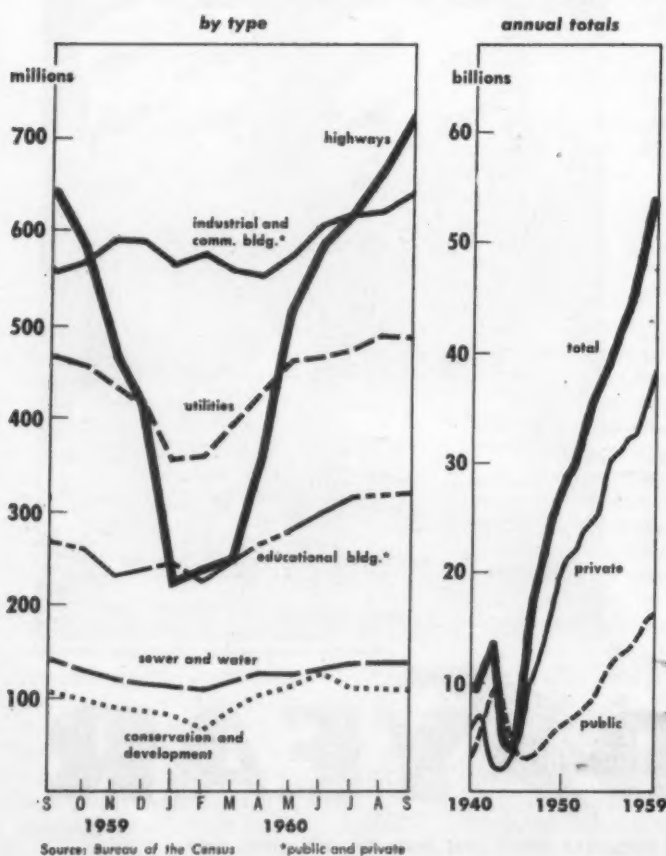
Injunction against city for allowing pollution

A Justice Department action (at the request of the Department of Health, Education, and Welfare) was filed against the city of St. Joseph, Mo.—and posed an immediate legal puzzle: How could an injunction be enforced against 78,000 individuals, as well as city officials?

Industry Trends

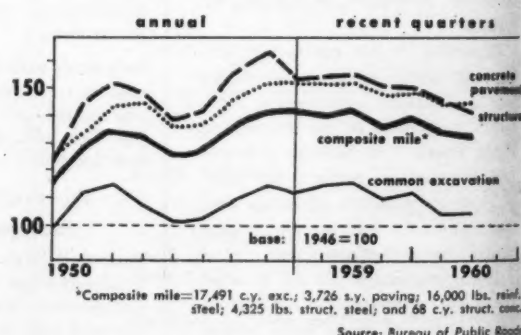
DOLLAR VALUE OF NEW CONSTRUCTION

Recent Monthly Trends



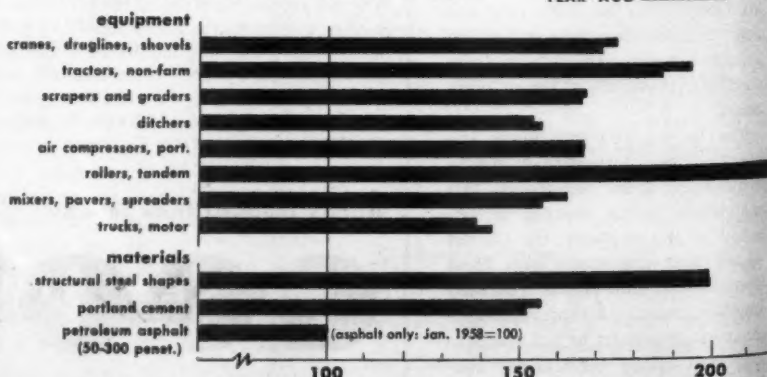
AVERAGE BID PRICES

Federal Aid Highway Construction



PRICE INDEX 1947-1949 = 100

AUGUST 1960 YEAR AGO



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The action arises out of HEW's or-
ders to the city to cease discharging
raw sewage into the Missouri River,
and to build a treatment plant to be
in operation by 1963. City voters,
however, flatly turned down a pro-
posed bond issue to finance construc-
tion of the plant.

The question of enforcement aside,
a favorable court action would put a
lot of muscle behind construction of
pollution-abatement works under
HEW orders.

Internal revenue ruling may cause hike in cement price

Probably the most serious move,
insofar as its immediate effect on
contractors is concerned, was an In-
ternal Revenue Service ruling chang-
ing the basis of depletion allowance
for cement manufacturers. Almost
certainly, the ruling will mean higher
cement prices next year.

IRS won a suit last summer against
a clay-pipe manufacturer (Cannelton
Pipe Co., Ind.) when the Supreme
Court ruled that the company must
take its "depletion" allowance out of
the price of the raw material (clay)
as mined, rather than out of the price
of the finished pipe, brick, or tile.

That set cement manufacturers to
worrying—and rightly so, although
their worry and queries did get them
a sort of half-loaf gain from IRS.
The tax service ruled that it wouldn't
force taking the depletion allowance
on the value of calcium carbonates
used in cement manufacture as mined
(where they have practically no value
at all), but would instead require that
the depletion allowance be taken on
the value of "kiln feed" (the car-
bonates and silica as fed to the kilns
for burning). But depletion cannot
be taken on the full price of the fin-
ished cement—either by the IRS rul-
ing, or by provisions of an amend-
ment of the tax law that becomes
effective January 1.

The ruling apparently won't affect
taxes up to the year 1960, but it is
obvious that cement makers will face
a cut in their earnings next year,
unless they raise prices.

Union district flexes muscles in unorganized labor area

On labor, watch for renewed ac-
tivity in the construction field by the
United Mine Workers' District 50.
The District's United Construction
workers—for the first time able to
make use of NLRB services—is feeling
its oats.

The prime example is in nearby
Virginia, where heavy-construction
work is largely unorganized. There,
within a year, District 50 has signed
contracts with one contractor, won
elections at some seven other firms,
and will soon seek contracts.

The action has so alarmed local
businessmen (as well as contractors)
that the Arlington, Va., Chamber of
Commerce has started a campaign to
inform members of their rights.

Until passage of the Landrum-
Griffin bill last year, UMW and UCW
couldn't get bargaining elections, be-
cause John L. Lewis refused to sign a
non-Communist oath. The new bill
removed that provision.

Real-estate tax amendment may provide construction money

Although the aim was primarily
housing, a big new source of general
construction money will probably be
available (from private investors) un-
der a new tax-law amendment that
exempts real-estate investment trusts
from corporate income taxes if they
distribute 90 per cent of the profits.

Now, for instance, the Sheraton
Corp. of America—one of the three
or four biggest hotel chains—has al-
ready made some moves to study a
change from the existing corporate
form to a real-estate investment
trust. Executives say that the shift
could about double earnings since
corporate income taxes, which last
year took about 50 per cent of gross
earnings, wouldn't have to be paid

under the new form. Lawyers think
that offices, factories apartments,
warehouses, and housing develop-
ments might also be built by a real-
estate investment trust.

There's a cautionary brake on the
whole thing: if Congress discovers too
much shifting and too much tax loss
as a result, it can plug up the hole as
quickly as it opened it up.

Panama Canal Co. seeking bids on 100 concrete housing units

President Eisenhower's 9-point pro-
gram for benefits to improve relations
with Panama will soon result in a lot
of construction work: The Panama
Canal Co. will seek bids in mid-No-
vember for construction of up to 100
concrete 4-room housing units—the
first of some 500 being planned—for

non-U.S. citizens at Pedro Miguel in
the Canal Zone.

Copies of bid schedules, drawings,
and spec may be obtained by writing
to the Designing Engineer, Balboa
Heights, Canal Zone, and sending a
\$50 deposit.

New manual on soil foundations for water-control structures

For your bookshelf: A new edition
of the Bureau of Reclamation's
"Earth Manual," providing current
technical information as to field and
laboratory tests of soils that may be
used as foundations and materials for
dams, canals, and other water-control
structures. It is available either from
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PROBLEM: BREAKING FROZEN TOP-SOIL!

SOLUTIONS:

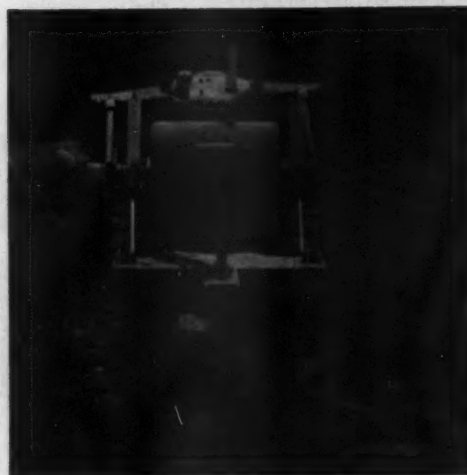
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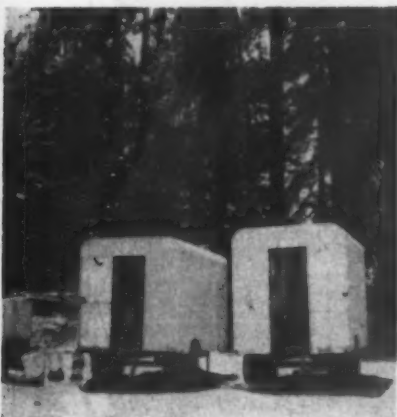
For more facts, use Request Card at page 18 and circle No. 253

Tricks of the Trade

A trailer to carry parts for just one machine

"All of our spare parts and supplies for the Lorain L-85 shovel are in this trailer, and there's nothing else in it," explains Roy L. Houck, founder of Roy L. Houck Sons Corp., Salem, Ore., grading and paving contractor.

Pointing to the second of two trailers standing at the edge of a gravel pit, he adds, "The parts for the Northwest 80-D are all there in that next trailer."



"If the Lorain needs a part," Houck explains, "the mechanic has only one place to look. If the part is there, he gets it in a hurry. If it is not there, we don't have it. He doesn't waste any time looking through a lot of other parts to be sure."

That sums up the reasoning behind this contractor's very efficient multiple-trailer system of parts storage.

Major units like these two shovels, the crushing plant, the asphalt paving plant, the new Koehring 34-E paver, and others, each has a special parts trailer. The size of the trailers varies with the volume of the parts stock to be carried.

When one of these machines moves onto a job, the trailer moves with it. In the case of the paver, the trailer even follows the paving spread, being moved ahead each day in order to have the materials and supplies handy for the cleanup and service period at the close of the day's run.

These trailers were built in Houck's Salem shops during the winter season when no paving can be done. They have welded steel frames and aluminum skins. Inside, shelves, bins, cabinets, and compartments are arranged for the convenient storage of the particular parts or supplies the trailer is expected to carry.

By using some of the key men of the paving spreads in the manufacture of the trailers, Houck was able to keep them on the payroll and have them available to start the paving season the next summer.

In addition to a normal complement

of replacement parts for a rig, these trailers carry any special lubrication equipment, special tools, and supplies.

On trucking and grading spreads, this contractor modifies the system to put all parts for specific groups of machines in separate trailers. On the grading spreads, for example, Euclid

scraper parts are in one trailer and Cat tractor parts in another.

At the crushing-spread shops, truck parts are kept in one trailer, Tournarocker parts in another, tires in a third, and steel supplies in a fourth.

The system minimizes the amount of inventory necessary to maintain

parts control and eliminates the need for keeping many of the records usually associated with parts inventories. It saves time when a part is needed. And it provides a simple and foolproof arrangement for keeping the machines and its supply of parts and accessories together.



LUBE LOGIC

These four tipschi

Keeping equipment on the job 92% of the time is an achievement anywhere. But when you can do it while operating in sandstorm country, over 12% grades out of a 300' deep pit to an additional 200' to top of spoil area, 100 miles from the nearest parts

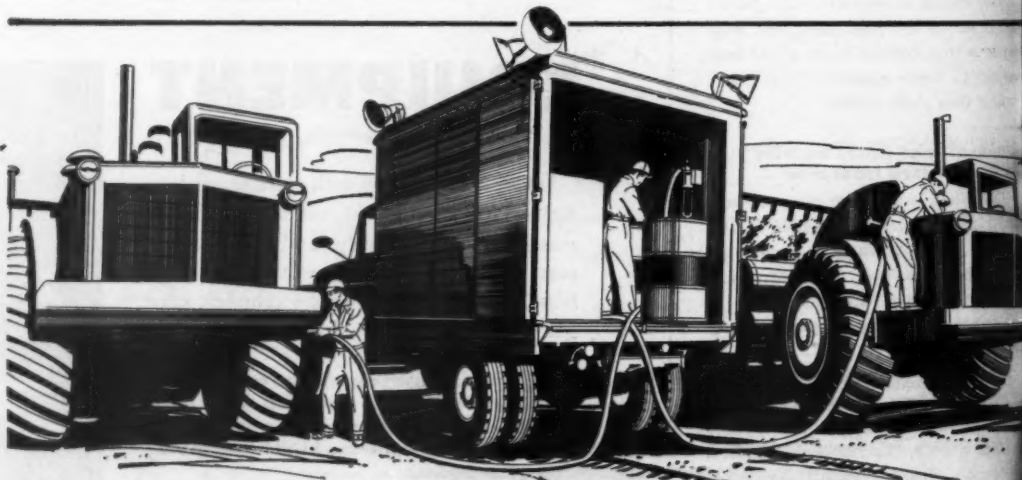
source — and while you're at it remove a million cubic yards of earth every month, it's a record. Maco Construction Co. is doing it right now, and in doing it they've set up such a fine maintenance routine that we think it'll be a help to you to read about it.

What Maco is doing

Maco Construction Co. is stripping the over-burden from uranium deposits recently located in the Gas Hills area of central Wyoming for Western Nuclear, Inc. This is the largest strip mining operation ever attempted in the state, and calls for the removal of 25,000,000 cubic yards of over-burden. In this large

open pit, the uranium ore lies from 250' to 300' below grade.

Maco is using twenty-two scrapers, six push tractors, two bulldozers, two motor patrols and one backhoe on the job. Texaco fuels and lubricants are used exclusively.



Clean-sweep lube rig handles two machines at once

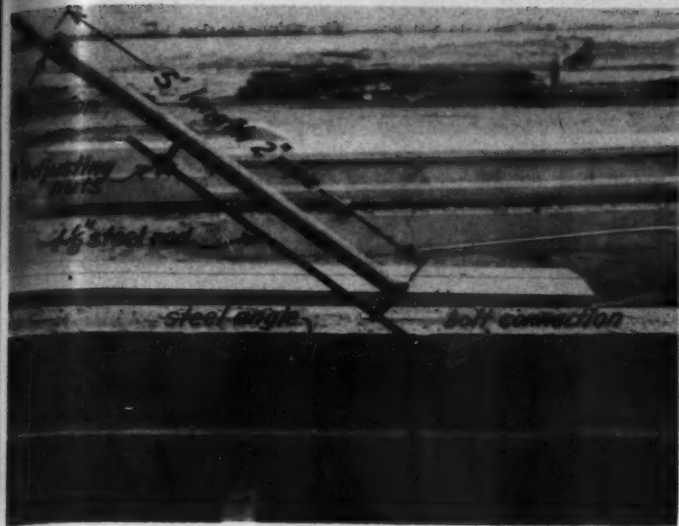
Maco personnel designed and developed a lube rig for this job that is just about as complete as they come — and it has the extra advantage of being able to service two pieces of equipment simultaneously, to make the most of the short period between shifts.

The rig is mounted on a 2 ton van that's kept warm in winter with waste heat from compressor and generator engines. It has two sets of hose reels, one on each side, so that two men can lubricate two different machines at the same time.

Since Maco has a Texaco Simplified Lube Plan, the

rig can accommodate sufficient lubricant inventory for the project. Air motors drive the lubricant pumps, and a separate electric air compressor furnishes air. A 25 KW diesel generator set mounted in the van provides power for air compressors, power pumps and the four big floodlights. Maco personnel built the tanks that hold motor oil and hydraulic fluid; transmission and lube grease are pumped direct from original containers.

With this lube rig it's possible for the maintenance crew to lubricate all major equipment in the three hour period between shifts, so no work time is lost.



Adjustable pipe braces speed erection of columns

An adjustable pipe brace, designed and built by W. H. Mechem Co., Flint, Mich., saves time in the erection of precast columns. The inexpensive brace can also be used for holding forms or for any other construction requiring a diagonal brace.

Rather than use four guy wires to plumb each precast column, Mechem found it much faster to steady the column with two pipe braces.

Each brace is made out of two lengths of 2-inch steel pipe joined by a sleeve screw connection. The lower 5-foot length is adjustable. The upper 10 feet of pipe may be unscrewed and replaced with a longer section if necessary. Since the brace can be broken down into two sections, it is easily stored and carried from job to job.

The lower 5-foot section of the brace contains a double nut and threaded rod adjustment. The 1 1/2-inch rod slides through two eyes cut in flanges welded to the pipe. The upper end of the rod is threaded. It holds two adjusting nuts, one on each side of the upper flange. These are for fine adjustment.

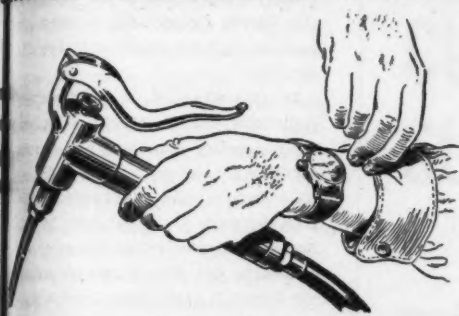
For the medium adjustment, the lower end of the rod can move toward or away from the column in a steel angle. The angle contains holes on about 6-inch centers to permit a bolt to tie the angle to an eye at the base of the rod. The angle is either secured to the foundation or welded temporarily to dowel steel.

The very top of the pipe brace makes a bolt connection with a steel collar placed about halfway up the 2-story column.

Mechem used the braces during the erection of the precast and prestressed members of the Parke, Davis & Co. chemical manufacturing plant in Holland, Mich.

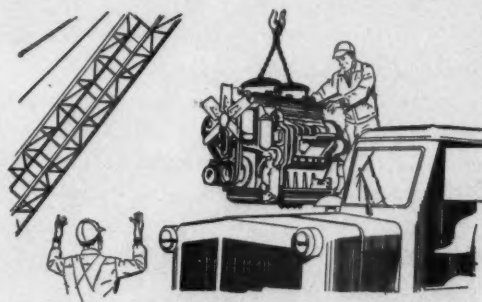


tips achieved 92% average availability



Clockwork lube scheduling boosts availability

Every machine on Maco's spread is serviced every day, in the period between the close of the day shift, at 4:30, and the beginning of the night shift, at 7:30. The 22 scrapers are lined up in a double row, and the mobile lube passes between them. Every machine is lubricated completely, and air filters are cleaned, at the end of every 10-hour shift. Crankcases are drained every 100 hours. Lube interval on gearboxes and torque converters is 2000 hours.



Replace-don't-repair theory cuts shop time

Although Maco is well equipped to handle emergency repair on the job, they cut shoptime drastically by sticking to an exchange system on major components like engines, transmissions and torque converters. Duplicate spares of these units are kept on hand. Then the defective unit is simply removed intact from the machine and replaced with a new or rebuilt one. All major repairs on engines, transmissions and torque converters are done at the Rawlins shops. Parts are flown in via Maco's own plane from headquarters in Rawlins, Wyoming.

Minimum downtime on equipment is the principal advantage of the exchange system, but not the only one. For instance, engine repairs can all be made in a fully equipped shop, without having to rush or make temporary repairs; and this system also ensures full availability of the field maintenance crew for their routine work.

Simplified Lubrication Plan protects 33 major units with only five products

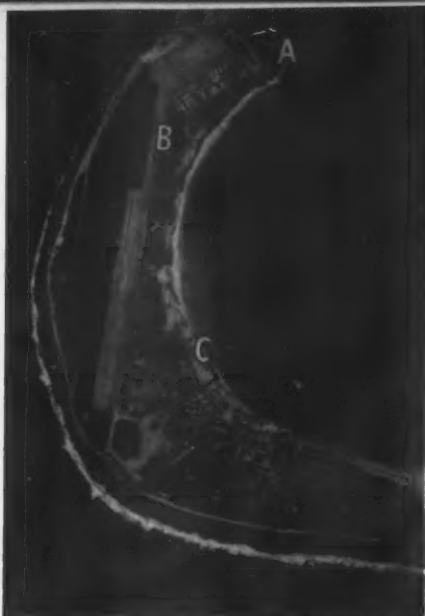
TEXACO SIMPLIFIED LUBRICATION PLAN	
1. SAE 30 Heavy Duty:	engine crankcases
2. SAE 100 Motor Oil 10W:	Eucild Torquomatic Drive
3. Universal Gear Lubricant EP:	all gear boxes and final drives
4. Crater 2K Fluid:	open gears and wire rope
5. Morkat Multipurpose:	chassis and track rolls

With their Texaco Simplified Lubrication Plan, Maco gets fast, thorough, systematic lubrication for all major equipment with the smallest possible lube inventory. This inventory simplifies and speeds up application routine because it avoids confusion, minimizes downtime due to misapplication of lubricants, and lets Maco put their lube inventory on the mobile rig for complete on-the-spot coverage.

Texaco Lubrication Engineers

There are 2,300 Texaco Distributing Plants in the U. S. ready at any time to help you develop a Texaco Simplified Lubrication Plan for your next job. Since every Texaco Plan is designed to lubricate specific equipment on a specific job, you'll get the best results by consulting a Texaco Lubrication Engineer. Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

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Kwajalein—site of the Nike-Zeus launching and control facilities that, with other bases on Roi-Namur and Johnston Island, will be used to test anti-missile missiles. Facilities include launchers (A), firing control equipment (B), target tracking equipment (C).

Big concrete job for island missile base

Coral aggregate for Kwajalein project produced from reef that is under water at high tide

by RALPH MONSON, field editor



The radar transmitter building, under construction, is being surrounded by a 60-foot-high fence of steel towers that will shield the radio-frequency field and protect personnel from rays that could be fatal. Access to the building is by tunnel. In the background, the receiver building is under construction.



Walls of this building are being formed with Economy form panels. In the background, the crane and tractor are cleaning up excess material from the coral surcharge and the foundation excavation.

Building missile bases under the best conditions entails construction speed and precision practically unknown in other types of work. But building these facilities on a small remote coral island in the middle of the Pacific Ocean adds problems in logistics as it multiplies ordinary difficulties.

In this situation, a joint-venture contractor, Pacific, Martin & Zachry, is constructing launching and control facilities for the testing of the Army's Nike-Zeus missile on Kwajalein Island as part of the Pacific Missile Range program. Other construction on nearby Roi-Namur and on Johnston Island is being done for the testing of the anti-missile missile.

Pacific, Martin & Zachry's \$14 million contract on Kwajalein is only a portion of the total project, which is being carried out under the supervision of the Honolulu District of the Pacific Ocean Division of the U. S. Army Corps of Engineers. The architect-engineer for the work is the Ralph M. Parsons Co., Los Angeles. PMZ is a combine of Pacific Construction Co., Honolulu; Reed & Martin, Inc., Fairbanks, Alaska; and H. B. Zachry Co., San Antonio, Texas.

Kwajalein, in the Marshall Islands, is located some 1,970 miles southwest of Honolulu. It is 2½ miles long, 0.6 miles wide at the widest point, and contains 515 acres. Its humid tropical climate creates severe corrosion conditions requiring a 4-inch cover of concrete over steel in all exposed



A Cat tractor clears a section of coral reef prior to drilling, which is done at low tide when the reef is exposed. Blasting is done at high tide.



After blast holes have been drilled into the tough coral, the holes are marked by sticks. At high tide, when the area is inundated, the shot will be fired.



A Damco Blastholer handles the quarrying operation. The 2-inch holes, on 4-foot centers, go some 10 feet deep.



A Ross Porto Batcher supplies all concrete for the work; three Cal-Rex 6-yard mixers on Mack trucks handle the transport. Coral is fed to the plant by conveyor.

CONTRACTORS AND ENGINEERS

locations, except where stainless steel is used.

Gigantic shooting range

The project will produce a gigantic shooting range for the testing of equipment and training of personnel in the art of shooting down missiles. The "clay pigeons" for the range will be Jupiter intermediate-range ballistic missiles or similar missiles fired from a base to be built on Johnston Island. Radar-controlled equipment on Kwajalein and Roi-Namur will detect the missile and automatically fire a Nike-Zeus missile from one of the four launchers on Kwajalein. The "clay pigeons" weigh 55 tons each, travel at 7,000 mph and cost more than \$1 million each.

Surcharge compacts foundation

Much of the construction area has an underlying stratum of silt 10 to 15 feet below grade. To meet the precise elevations required, especially on the radar receiver, transmitting building, and target-track radar building, the silt had to be consolidated. These areas were loaded with a surcharge of coral approximately equal to the weight of the building to be constructed. This was allowed to remain until subsidence stopped. Then the surcharge was removed, and work was done on the building.

Since footings for the radar antenna and the transmitter building extended below water level, a Moretrench well-point system was installed to keep these excavations dry until the footings were placed.

The shaft for an antenna servicing lift in the target-track radar building required a vertical hole extending to 41.7 feet below mean sea level. The shaft was excavated through the coral by pick and shovel, and the material was hoisted to the surface in buckets. Cylindrical steel liners were placed as the shaft was excavated, and pumps were operated continuously to keep it dewatered. The hole was 69 inches in diameter at the top and tapered to 48 inches at the bottom.

The metal liner for the antenna shaft had to be plumbed within 1/4 inch in its 45 feet of height. Some of the foundations were required to be within 1-mil tolerance of horizontal. Coral quarried from the ocean reef on the east side of the island was crushed for concrete aggregate. The hard coral occurred in two layers ranging from 2 1/2 to 9 feet deep and separated by a 6 to 8-inch layer of sand.

At low tide, a track-mounted Demco Blastholder drilled a checker-board pattern of 2-inch blast holes at 4-foot centers to an average depth of 10 feet. These were loaded with Japanese dynamite, with the small

(Continued on page 13).



Steel is set by this crane for the circle of high towers being erected around the transmitter building.

DEMONSTRATIONS PROVE CURTISS-WRIGHT SUPERIORITY



Greater Bowl Factors — Faster Cycles Give Top Profit Per Equipment Dollar

You know that the machine that moves the most dirt makes you the most money—but, how do you select that machine? By past experience? No, because constantly changing models, techniques and contract conditions make this method impractical . . . By appearances? No again! You wouldn't bid a job on surface appearances alone, so why risk your profits by buying a scraper by the same method.

This leaves only one practical solution to the problem of buying a scraper. That is actual performance evaluation in the field, with a decision based on load weights, bowl factors, cycle times and the many other points that add up to high production. As one contractor says: "We considered three other major makes of scrapers for the job, but comparison and field demonstrations proved Curtiss-Wright the best machine. We feel that the added production and high bowl factors will save several cents per yard for any contractor, as it has for us."

Savings such as this are the result of buying by proven performance. See these results for yourself with a Curtiss-Wright demonstration on your job.



A C-W MODEL FOR EVERY APPLICATION

Five self-propelled scrapers with capacities from 8 to 26 cu. yds. struck, up to 36 cu. yds. heaped . . . Three interchangeable rear dumpers with 25 and 35 ton capacities . . . Six tractor-drawn scrapers with capacities from 8 to 30 cu. yds. struck, up to 39 cu. yds. heaped . . . A total of 14 high-performance machines covering the complete range of practical earthmoving applications.

SOUTH BEND DIVISION
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For more facts, use Request Card at page 18 and circle No. 255

NOVEMBER, 1960

Now! A complete line of ATLAS COPCO rock drills with the original "Autoleg"!



TIGER

BBD 50

fastest hitting in the line. Ideal for stoping and development work!

PUMA

BBC 15

general-purpose drill for fast, easy drilling in all types of rock!

LION

BBC 22

fast, dependable machine for "highballing", long hole drilling and tunneling!

ATLAS COPCO'S TIGER, PUMA, LION have all controls under one hand, automatic water flushing and original "Autoleg" that retracts automatically increasing footage per man-shift!

Comparison of the Tiger, Puma and Lion

	TIGER BBD 50	PUMA BBC 15	LION BBC 22
Weight (lbs)	60	55	65
Weight w/pusher	94	89	99
Blows/min.	3050	2300	2000
Bore ins	3	2 3/4	2 3/4
Stroke ins	1 3/4	2 5/32	2 3/4

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◀ Coral surcharge, equal to the weight of the structure to be built in this area, is used to consolidate underlying silt. Surcharge will later be removed and the building constructed. The tractor-dozor is shaping up one of the piles as a truck makes a dump.



Each of these circular tanks holds a million gallons of water for the island's needs. Each inch of rainfall adds some 1.2 million gallons to the system.

(Continued from page 11)

sticks bundled to fit the 2-inch holes. The average load was about 1/2 pound of explosive per cubic yard of coral.

At high tide, the dynamite was detonated electrically. After a shot, the sharks always came in to feed on the fish that had been killed.

The material was loaded by a 3-yard dragline into Euclid end-dumps that hauled to the processing plant. It cost the contractor \$4.50 per cubic yard to get the material to the crusher.

At the Cedarapids crushing and screening plant, an apron feeder supplied the material to an impact breaker for crushing. Two workmen watched the feed belts continuously to pick out live ammunition that cropped up in the coral. Coral from the breaker was screened into three sizes, with the fines going to an Eagle sand washer and classifier to be processed into sand.

The concrete was proportioned by a Ross Porto Batcher. A Trojan 2-yard tractor shovel supplied the three aggregate bins of the batcher from the stockpiles. Sack cement from Japan was handled on pallets by a fork truck. The sacks were opened by hand and dumped to the elevator leading to the plant's cement bin, which weighed out the material.

Darex air-entraining agent was added as the materials were discharged into transit mixers for 80 revolutions of mixing. Three Mack trucks carrying 6-yard Cal-Rex mixers delivered all the concrete. The contractor found that this coral concrete set very rapidly, but it was never determined whether the cement or the aggregates was the cause.

Forming and placing

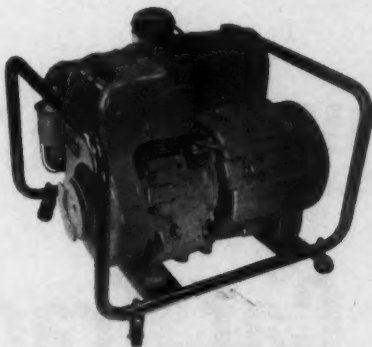
One of the buildings and a million-gallon water tank were formed with Economy form panels. The other structures were formed with plywood and tied with snap ties. Most of the building roofs were steel decking with 2 1/2 inches of insulation and built-up roofs.

The concrete was either chuted directly from the transit mixers or placed by crane and bucket.

Radar fence

An unusual feature of the construction is the huge fence surrounding the radar building. The continuous

(Continued on next page)



FOR INSTANT POWER
THAT'S ALWAYS
ON THE JOB...

PLUG INTO A

ZEUS

PORTABLE
ELECTRIC
GENERATOR



Here's the portable power plant that stays on the job . . . generates 3000 watts of dependable AC electricity for power tools, floodlights, pumps, motors . . . *anyplace, anytime!* Maintenance? Who needs it with the Zeus! The exclusive Borg-Warner Permanent Magnet Alternator connects directly to the engine. There are no belts to replace, no brushes or commutator to wear, no slip rings, exciter or voltage regulator to replace! Powered by a heavy-duty gas engine, the GW-300 Zeus shown above delivers continuous full voltage for hours without overheating . . . features three fused outlets (115v & 230v). It is available with optional frame, casters, fuel tank and other accessories.



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STREET.....
CITY..... ZONE..... STATE.....

For more facts, use coupon or Request Card at page 16 and circle No. 257



On Johnston Island, some 1,400 miles northeast of Kwajalein, a joint venture is dredging fill to add 23 more acres to the island's area. A Manitowac 4500 dragline is loading coral to a Kenworth truck with 25-yard dump body, while a Euclid waits its turn.

(Continued from preceding page)

row of steel towers rises 60 feet above the ground and encloses an area 660 feet in diameter around the building. This unusual fence shields the radio-frequency field, emitted by the big radar unit, to the height towers reach above the ground. This protects personnel from the radar rays, which are so intense that they could be fatal. Personnel operating the equipment enter the building through a tunnel.

The big steel towers were prefabricated on the ground and set in place on concrete footings by one of the cranes.

Unique water supply

One element of the contract was the enlargement of the island's unusual water-supply system. Rain water is caught in a 53-acre catchment area between the runway and taxiway of the island airstrip. This area, paved with coral concrete, impounds 1.2 million gallons of water per inch of rainfall and has a total capacity of 5 million gallons.

The water is drawn from the catchment area and stored in 15 tanks, each with a capacity of 1 million gallons. From these, the water is pumped through a treatment plant into the distribution system, which includes a 100,000-gallon overhead storage tank.

Personnel

Some 500 men were at work on this contract during this phase of the work. By contract arrangements, personnel were flown between Honolulu and Kwajalein by the MATS. Job materials were transported from Oakland by MST3, augmented by tug and barge operation of the contractors.

For the joint venture, Lloyd Martin, president of Reed & Martin, Inc., served as general manager, coordinating the work from headquarters at Fort Armstrong, Honolulu. The project manager of the operation was Frank Kuich. The manager of the Honolulu office was John Story.

For the Corps of Engineers, Lt. Col. Walter P. Blum is the area engineer, and Col. John R. Clifton is district engineer of the U. S. Army Engineer District, Honolulu. This district is a part of the Pacific Ocean Division headed by Brig. Gen. E. I. Davis, division engineer

THE ENR

Standard paving mixes adapted to curbing work

■ The Asphalt Institute laboratories at the University of Maryland recently completed studies indicating that the addition of about 15 per cent of powdered asphalt to a dense-graded paving mix (based on the weight of the asphalt in the mixture) will produce a suitable curbing mix and an appropriate increase in binder quantity.

Curbing mixes prepared with an 85 to 100 penetration asphalt cement (commonly used in run-of-plant paving mixes) and varying amounts of high-softening-point powdered pe-

troleum asphalt and powdered Gersonite of zero penetration were used in the laboratory studies. The powdered asphalt was blended with the asphalt cement in varying amounts to determine the rate of consistency change and the effects on other test properties. Test specimens were also prepared by mixing the powdered asphalt with the heated aggregates before adding the asphalt cement. These showed satisfactory improvement in the mix properties, and the method is most practical in plant operation.

Why all three models of Cat Tractor-Scrapers in our fleet?



Gordon Ball, President, Gordon H. Ball, Inc., Danville, California

"It's simple. We've learned that we get the highest, most economical production with machines that are matched to the job. Each job we do is different—and conditions vary on each job. The most important common factor is the need for high production at lowest cost.

"No one machine can do everything best. Some can handle grades better. Some can haul bigger loads faster. Others can work in tighter quarters. So we want the machines that best fit the jobs. This gets us to Cat Tractor-Scrapers. Each one—DW21, DW20, 619—gives us high production under a broad range of applications. And each does it *economically*. But each can handle certain conditions better than the others. With only one model, we would have to live with conditions that limit the machine's effectiveness on parts of the job to get best over-all production. With all three models, we can use the one that works best on each phase of the project, for highest total production at lowest cost.

"What are these conditions? Take bad grades or soft underfooting. Our versatile DW21s handle these with comparative ease. When we can take advantage of their high speed on long hauls, we use our high production DW20s. And when we have to work in tight quarters where maneuverability is essential, we bring in our smaller 619s. This doesn't mean any of them sit idle when these conditions don't exist. We simply take

care of the special conditions with the best suited machines, and put the rest to work on other jobs.

"Take a look at typical assignments. The DW20s and DW21s are working on highway projects. Up to two miles permit efficient use of the high speeds of the four-wheel DW20s. Steep grades, particularly around Conway Summit, are best handled by the two-wheel DW21s. The 619s easily handle work in the deep narrow channels of the San Luis Creek Flood Control Project.

"Of course, a major consideration is their ability to do this month in and month out, with little lost time in maintenance. They must be, and are, ready to go when we need them, and able to stay on the job until the work is done. This combination of high production, ability to handle any job and low maintenance helps move our dirt fast at the lowest possible cost."

FOR INFORMATION about Cat Tractor-Scrapers, contact your Caterpillar Dealer.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

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A TRACTOR-SCRAPER FOR EVERY JOB

Labor Review

Change in working hours is not warranted, states Connecticut Mediation Board

Considering the probable effects of a change in working hours on non-disputants in the area, and finding no proof of the existence of any "unusual economic hardship," as asserted by the Associated Builders and Contractors of Fairfield County, Inc., the Connecticut State Board of Mediation and Arbitration agreed with three Norwalk crafts that the estab-

lished working hours—8 a.m. to 3:30 p.m. during Daylight Saving Time and 8:30 a.m. to 4 p.m. the rest of the time—should be continued.

The association wanted working hours changed to a year-round schedule of 8:30 a.m. to 4 p.m.

The unions involved were Carpenters' Local 746, Laborers' Local 146, and Bricklayers' Local 5.

The association argued that members have difficulty in getting supplies, especially concrete and ma-

sonry materials, delivered to job sites before 8:30 a.m. This means, the employers, argument continued, that employees who are reporting to work at 8 often must wait for thirty minutes or more with nothing to do, and this is a costly practice. The association stated that most of the trade locals in the general area are aware of the problem and work an 8:30 to 4 work-day.

The union claimed both the unanimous backing of its membership and the support of independent area contractors for its stand against the proposed change in work hours. It argued that working the early hours

during the summer months is advantageous to the contractors, as well as to the employees, for in having to labor less time in the severe heat, the employees are more productive. Rejecting as false the association's claim regarding the difficulty of getting supplies delivered to the job site for an 8 a.m. starting time, the union stated that materials should be ordered the day before they are actually needed on the job.

The board found that, in contrast to the association's complaint about the time wasted waiting for morning deliveries, many mason contractors have no such problems and opposed the change. The board concludes:

"Further, the Board is forced to ask that if this problem is a severely adverse economic factor, why does it not affect equally all or most contractors, and why would some of the biggest contractors in the area come to the Board denying this added cost and objecting to the change? It is impossible to reconcile this testimony with the existence of any severe economic penalty connected with the work hours. In short, the Board does not agree that the Association has established the presence of any unusual economic hardship which would warrant the change requested."

Peoria boilermakers negotiate 3-year, 56-cent package

Boilermakers Lodge 60 wrapped up a 3-year agreement for work in the Peoria, Ill., area. According to the union, the contract raises hourly wages 15 cents each year, and adds 11 cents an hour to employers' fringe payments.

The journeyman rate was increased to \$4.20 an hour as of September 1; a one-cent employer contribution for apprenticeship training began on the same date; and a 10-cent health and welfare contribution is continued from the old agreement.

Effective one month later—October 1—employers began paying 10 cents an hour to the Boilermaker-Blacksmith National Pension Trust. Additional wage increases are due on each anniversary date.

Rhode Island bricklayers sign for three years; get 52½-cent total increase

The Associated General Contractors' Rhode Island Chapter and Bricklayers Local 1 signed a new agreement increasing wages and fringe payments a total of 52½ cents to be distributed over the next three years.

A 7½-cent wage increase, which was effective September 25, brings the hourly rate to \$4. At the same time, employers started to contribute 7½ cents hourly to a pension fund. Wages will be increased another 10 cents, and the pension contribution goes to 15 cents on September 24, 1961. A final 20 cents goes entirely into wages on September 23, 1962. The agreement expires a year later. A 12½-cent health-welfare contribution is continued under the new agreement.

For more facts, use Request Card at page 16 and circle No. 258

W21 Series G

producer on bad grades
soft going
(Maximum Output)
SynchronTouch Trans-
Control—split-second
with the efficiency of
4788 Scraper—
19.5 cu. yd. struck
27 cu. yd. heaped



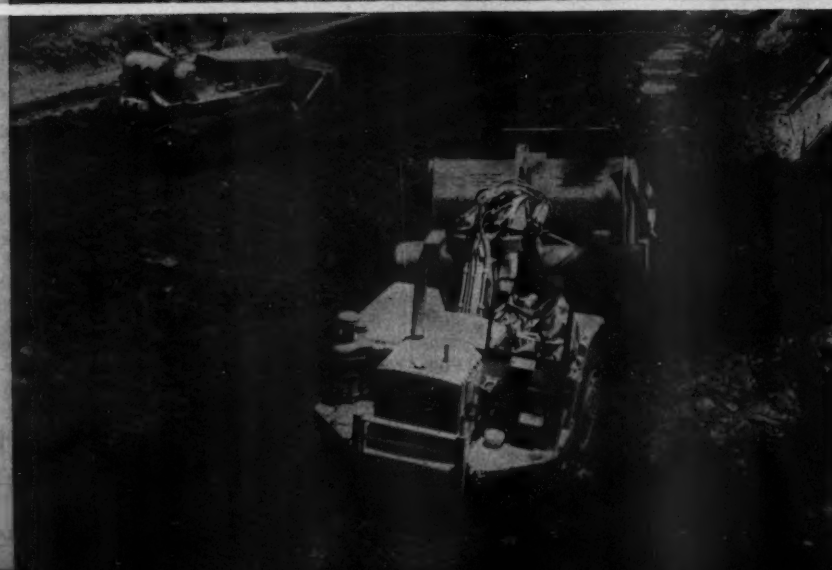
W20 Series G

producer on long hauls
(Maximum Output)
SynchronTouch Trans-
Control
of Scrapers:
19.5 cu. yd. struck
27 cu. yd. heaped
24 cu. yd. struck
34 cu. yd. heaped



W19 Series B

producer in tight
(Maximum Output)
turning diameter
4428 Scraper
14 cu. yd. struck
18 cu. yd. heaped



Loader-scraper team keeps yardage moving

**Rate is over 11,000 yards per 10-hour day;
total excavation is over 1,700,000 yards**

Contractors and Engineers staff article

Using a combination of scrapers and loaders, Williams Construction Co., Inc., Baltimore, Md., has been moving over 11,000 cubic yards of excavation per 10-hour workday on a road job just outside Baltimore. The \$2,967,775 contract for the grading, structures, and paving of the complex interchange between the Baltimore Beltway and the Northeast Expressway requires over 1,700,000 cubic yards of excavation.

Loader speeds work

Williams is using a Euclid loader to charge roadway excavation into the fleet of nine Euclid 13-yard bottom-dumps. It takes only 17 to 19 seconds to load a rig and send it on its way.

Two Caterpillar D8 tractors, one pulling and one pushing, handle the Euclid loader as it makes its passes along the roadway cuts. In addition to the loader and bottom-dumps working the various cuts, the contractor has a D8 tractor-dozzer and a Cat No. 12 grader to keep the excavation from getting too chopped up.

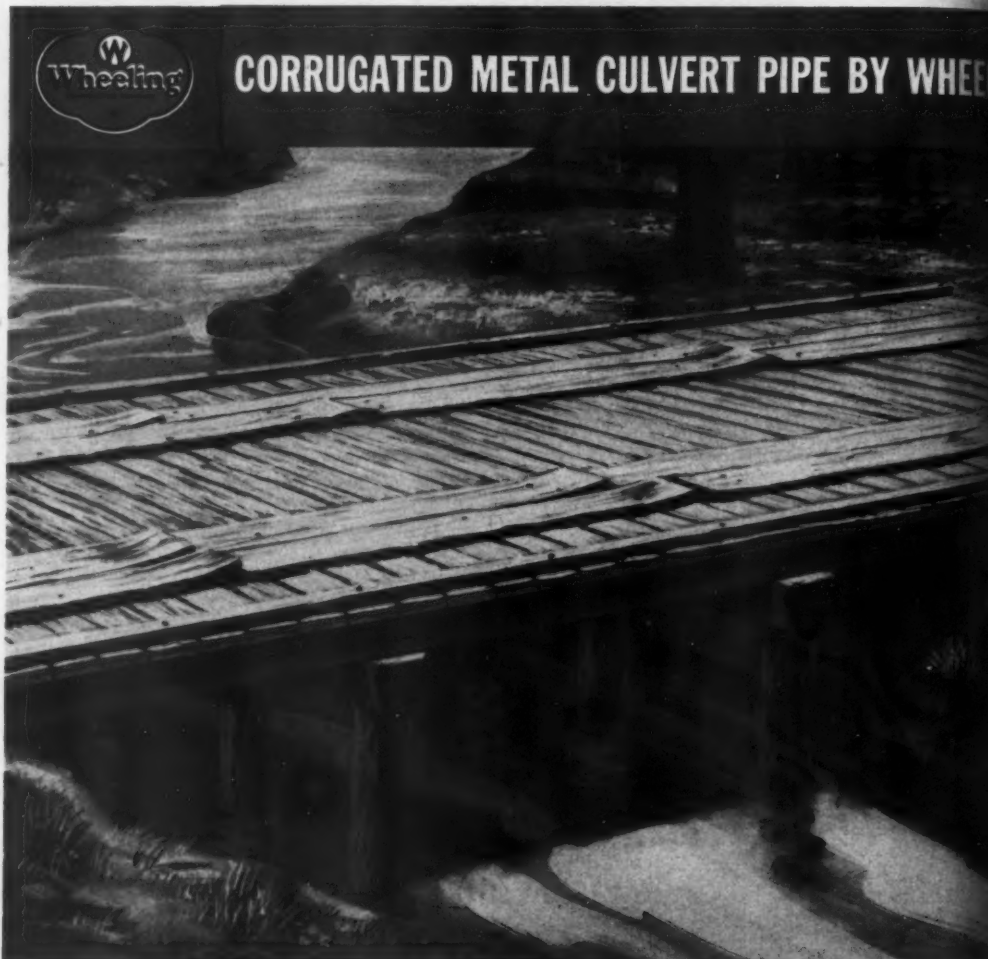
Williams also has about nine Cat DW20 scrapers and three cable scrapers, pulled by two Allis-Chalmers HD-21's and one D8, working other cuts on the project. A D9 tractor is used to push-load the scraper fleet.

Earthwork balanced

All the excavation is being used to build up fill areas. The bottom-dumps and scrapers dump the fill material, which is spread in 6-inch lifts by D8 tractors. Ferguson 50-ton pneumatic rollers—one pulled by a D8 and one pulled by an HD-21—handle the compaction of the lifts.

The largest cut on the job, about 50 feet deep, involves the removal of

In 17 to 19 seconds, this Euclid loader fills a Euclid 13-yard bottom-dump with excavation from a 31-foot cut on the Baltimore Beltway project north of the city.



Problem: Because outdated bridge is used regularly by heavy logging trucks, bridge requires monthly inspection, frequent maintenance

Solution: handles per

Best way to "modernize" old bridges!

Why fight an endless battle to maintain old bridges? Especially when you can replace these "budget eaters" with low-cost Wheeling Corrugated Metal Culvert Pipe. Just look at the advantages it has!

Resistance to shock and vibration—Unlike concrete pipe, Wheeling Corrugated Culvert Pipe is flexible. So it absorbs the severe shock caused by shifting fill and heavy trucks.

Amazing strength—This same flexibility makes Wheeling Culvert Pipe far stronger, because it enables the pipe to "borrow" strength from the surrounding earth (see for yourself

by conducting this simple test with your garden hose).

Won't disjoint—Wheeling Culvert Pipe adjusts to the pressures created by shifting fill cause it has beam strength... Wheeling Culvert Connecting Band grip both pipe ends securely.

Special end treatments—Never a problem! You always get fast, economical service on special end treatments including skews and bevels, from nearby Wheeling Culvert Plant.



Special finishing—abrasive special finishing bituminous out paved

You always ing Culver

Wheeling plants at D City, Louis

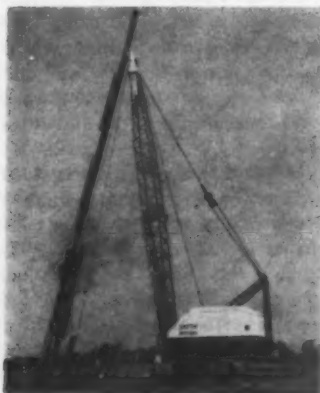
USE WHEEL

Where headroom special wide-ba

IT'S W

New Orleans

NOVEMBER



Monotube steel piling had to be driven to a 50-ton bearing for many of the job's structures. The work is being done here by an American crane with a Delmag diesel hammer. A 4-span bridge and three 3-span bridges, plus culverts, are included in the contract for the project.

WHEELING CORRUGATING COMPANY

Warehouses: Boston, Buffalo, Chicago, Columbus, Detroit, Kansas City, Louisville, Minneapolis

CONTRACTORS AND ENGINEERS



Two Cat D8 tractors, one pushing and one pulling, handle the Euclid loader in the excavation. Excavation goes into fill areas in 6-inch lifts. Some 218,000 yards is required for the biggest fill, which goes 35 feet deep.



This Allis-Chalmers HD-21 tractor pulls a cable scraper while a pushing assist is provided by a D9. In the background is one of the DW20's on the project. About twelve scrapers are at work in the various cuts.



Solution: Wheeling Large Diameter Corrugated Metal Culvert Pipe easily handles peak stream flow . . . absorbs shock created by logging trucks.

Special finishes — For corrosive or abrasive situations, Wheeling supplies special finishes, including full and partial bituminous coatings with or without paved inverts.

You always get fast delivery on Wheeling Culvert Pipe and Fittings because Wheeling maintains special culvert plants at Des Moines, Detroit, Kansas City, Louisville, Madison, Wis., Mar-

tins Ferry, Ohio, Minneapolis, Peoria, Ill., Philadelphia and St. Louis.

Get the whole story on Wheeling Corrugated Metal Culvert Pipe (both copper-bearing steel and copper-bearing pure iron) from your Wheeling man this week. Or write directly to Wheeling Corrugating Company, Wheeling, West Virginia.



WHEELING CULVERT PIPE HERE, TOO!



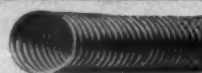
Where headroom is limited, use special wide-based Wheeling Pipe Arch.



For efficient roadside drainage, use Wheeling Small Diameter Culvert Pipe.



For deep, fast-flowing streams, use Wheeling Large Diameter Culvert Pipe.



For deep, shifting fill, use Wheeling Large or Small Diameter Culvert Pipe.

IT'S WHEELING STEEL!

New Orleans, New York, Philadelphia, Richmond, St. Louis. Sales Offices: Atlanta, Houston.

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over 278,000 cubic yards of earth. The largest single fill, about 35 feet deep, requires an estimated 218,000 yards of material.

Williams' contract includes, besides the paving, the construction of a 4-span steel bridge; three 3-span bridges; three double 16 x 8-foot box culverts; two double 14 x 8-foot box culverts; two single 7 x 5½-foot box culverts and two single 10 x 6-foot box culverts.

For most of the structures, the contractor has to drive Union Mono-tube piles to a 50-ton bearing to provide adequate support. A Delmag No. 12 diesel hammer and an American crane handle this pile driving.

Work scheduling

This month the Williams firm expects to have the northbound roadway of the Northeast Expressway section of the contract paved and connected to the eastbound roadway of the Baltimore Beltway section. These sections will be opened to permit traffic to travel the Northeast Expressway and the Baltimore Beltway, which will be tied into U. S. 40—the main artery feeding the Baltimore area.

In all, Williams has a 2½-mile section of the Beltway and a ½-mile section of the Northeast Expressway to build. In addition, more than 2¼ miles of connecting ramps—varying from 17 to 24 feet in width—must be built to provide curved, high-speed connections between the two routes. The project is scheduled for completion by the end of 1961.

Personnel

C. Taylor is the superintendent for Williams Construction Co., and C. D. Sullivan is the resident engineer for the Maryland State Roads Commission.

THE END

Industrial Boiler firm names sales manager

The Industrial Boiler Co., Inc., Chattanooga, Tenn., manufacturer of the Chattanooga materials heater, has appointed Percy Todd general sales manager.

For the past 20 years, Todd has been employed in an executive capacity by a leading asphalt-plant manufacturer, primarily in sales.



SWAIN CONSTRUCTION COMPANY of Kingstree, South Carolina, used a Huber-Warco 10-D motor grader on their recent road building project near Pinewood. The 10-D leveled fill, cut the sub and finish grades, ditched and banksloped on the 15-mile job.



HUBER-WARCO

high production

MOTOR GRADERS

RUGGED CONSTRUCTION—Heavy-duty frame, circle, drawbar, drive units and other components, combined with dependable diesel engines, assure years of low-cost service on any type of grading assignment.

HYDRAULIC CONTROLS—Complete blade control without leaving the cab—including all bank sloping positions. Precise control is ideal for finish grading. Ease of operation means less operator fatigue and more production.

EASY SHIFTING—Full constant-mesh transmission, including range shift, enables operator to shift while moving. Shifting one lever reverses direction in same gear. Six speeds in both forward and reverse. Optional creeper gears give three additional speeds in forward and reverse. Ball and tapered roller bearings used throughout the transmission and final drive assemblies. A pressure flood system assures positive lubrication of every bearing, gear and shaft under all conditions.

A trusted product name backed by respected distributor names from coast to coast



MOTOR GRADERS

Standard transmission models from 83 to 160 H.P. Torque converter and power shift transmission models from 102 to 195 H.P.



TANDEM ROLLERS

3-5 Ton • 4-6 Ton
Retractable • 5-8 Ton • 8-10 Ton • 8-12 Ton • 10-14 Ton



3-WHEEL ROLLERS

10-Ton • 12-Ton • 14-Ton Standard Weight
10-12 Ton • 12-14 Ton Variable Weight



MAINTAINER

M-52 — 45½ H.P. Attachments are Lift-Loader, Broom, Bulldozer, Patch Roller, Scarifier, Snow Plow, Berm Leveler

HUBER-WARCO COMPANY Marion, Ohio, U.S.A.

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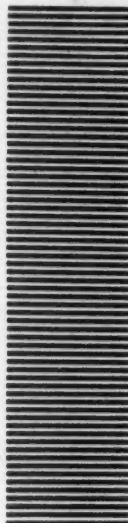
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Manufacturer Memos



Thomas R. Galvin, assistant to the vice president of sales, The White Truck Division of White Motor Co.

Thomas R. Galvin has been appointed assistant to the vice president of sales of The White Truck Division, The White Motor Co., Cleveland. Galvin will be responsible for channeling information reference prices, specifications, and corresponding data to the company's field organization. He has been a member of White's Cleveland branch sales staff since 1957.



H. T. Larmore, general products manager of Allis-Chalmers' construction machinery division.

H. T. Larmore has been named to the new post of general products manager of the construction machinery division of Allis-Chalmers Mfg. Co., Milwaukee, Wis. Larmore's appointment is part of an organizational change involving the creation of six construction machinery sales regions, each of them covering the sales territories of two division branches.

The following were named as managers of the six new sales areas: J. M. Halle, Northwest region; G. E. Hall, Eastern region; A. L. Lowery, Central region; L. D. Myers, Southern region; K. A. New, Northeast region; and J. T. Skinner, Western region.

Flygt Corp., Hoosick Falls, N. Y., has named R. H. Lewis service manager and K. V. Arvidson a district sales representative.

Arvidson will have charge of distributor sales of Flygt's line of electric submersible pumps in Illinois, Minnesota, Wisconsin, and the Upper Peninsula of Michigan.



Eugene P. Berg, new executive vice president of Bucyrus-Erie Co.

Eugene P. Berg has been elected executive vice president of the Bucyrus-Erie Co., South Milwaukee, Wis. He was previously general manager of Chicago operations of the Link-Belt Co.

Now staff assistant to the vice president of sales at the Bucyrus-Erie Co. is Robert L. Siemer. Previously, Siemer was administrative services manager. He has been with the firm since 1953 in various capacities.

William A. Cooper has been appointed to the newly created post of manager of distributor sales for the Industrial Products Division of The Goodyear Tire & Rubber Co., Akron, Ohio.

Cooper will be responsible for strengthening Goodyear's Industrial Products distributor organization. He will also assist in the establishment of new dealers.

The board of directors of the Timken Roller Bearing Co., Canton, Ohio, recently elected R. L. Frederick a vice president in charge of International Divisions and appointed R. A. Gull-

R. L. Frederick, vice president in charge of International Divisions for Timken Roller Bearing Co., Canton, Ohio.



ing to the office of controller.

Frederick has been with the Timken Co. since 1940 and Gulling since 1943.

Named new sales representative for the Union Wire Rope Corp., Kansas City, Mo., is Lloyd C. Smith III. He will handle Virginia and parts of Kentucky and West Virginia and will report to the Ashland, Ky., office.

Charles E. Haney has become a vice president of Esco Corp., Portland, Ore.

Dar G. Johnson, Jr., is the new manager of sales, mill products, for Esco-Southwestern in Los Angeles.

Bob Zwald is new assistant to Esco's general sales manager. Jack McNally has become advertising manager. Paul Fillingier is manager of product promotion.



Charles E. Haney, new vice president of Esco Corp.



THREE TIMES FASTER!

The payoff on a concrete gun rig is the amount of material it puts out and the quality of its output. Simply stated, Ridley Rigs outperform any other rig, any time, any job.

Speed — Averaging in excess of 75 bags of cement per hour mixed in a 4½:1 ratio, one Ridley Rig outperforms 2 to 3 ordinary rigs, even those equipped with two guns.

Quality — Cylinder tests run twice daily by the Corps of Engineers on the missile base at Altus, Oklahoma showed a seven day compressive strength of 4250 psi on a 2000 psi specification.

The outstanding performance of Ridley Rigs in speed, quality, ease of operation, freedom from maintenance and reduced operating cost is a matter of record. Ridley Rigs are the result of engineering and manufacturing skills of the highest order added to years of exclusive experience.

One demonstration will prove to you the money-saving efficiency of a Ridley Rig. Available in the widest line of models in the industry, truck or trailer mounted, 40 to 90 sacks per hour.

Write today:

RIDLEY AND COMPANY, INC.

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Concrete Gun
Rigs Cut Time
on Missile
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Ridley Rigs are on the job at missile sites in: Roswell, New Mexico • Salina, Kansas • Altus, Oklahoma • Lincoln, Nebraska • Plattsburg, New York • Marysville, California.

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Construction Camera



Glen Canyon Bridge, praised for its "elegant, airy arch design" and for being "detailed with great deftness and grace . . . with a minimum of disturbance to the landscape," is the winner of the Class I award, for bridges with spans of 400 feet or more, in the annual most beautiful steel bridge competition



sponsored by the American Institute of Steel Construction, New York, N. Y. The bridge, designed and owned by USBR, was fabricated by Judson Pacific-Murphy Corp. The Class II award went to the Huasna River Bridge, above, near Santa Maria, Calif. This class is for bridges with fixed spans

Structural mechanics textbook is offered

■ The Ronald Press Co. has published "Introduction to Structural Mechanics," by Paul Andersen and Gene M. Nordby.

This 400-page book, designed for the first civil engineering course in structural analysis, is concerned with basic theory and its application to traditional structures such as roof trusses and railway and highway bridges, as well as to aircraft structures and machine design. General methods of approach to the various types of trusses are emphasized, rather than specialized techniques.

Special attention is given to 3-hinged arches, the effects of moving loads on frames, and space truss structures. A discussion of the method of influence lines is included.

Some 420 illustrations and numerous problems supplement the text.

The book may be obtained for \$9.50 from the Ronald Press Co., 15 E. 26th St., New York 10, N. Y.

Malsbary expands

■ Malsbary Mfg. Co., Oakland, Calif., is constructing a new factory in Uniontown, Pa., and plans to put it in operation by the end of the year. Manufacturing and sales headquarters will remain at the Oakland factory.

The company manufactures steam cleaners, steam generators, and industrial water heaters.

Timken appointment

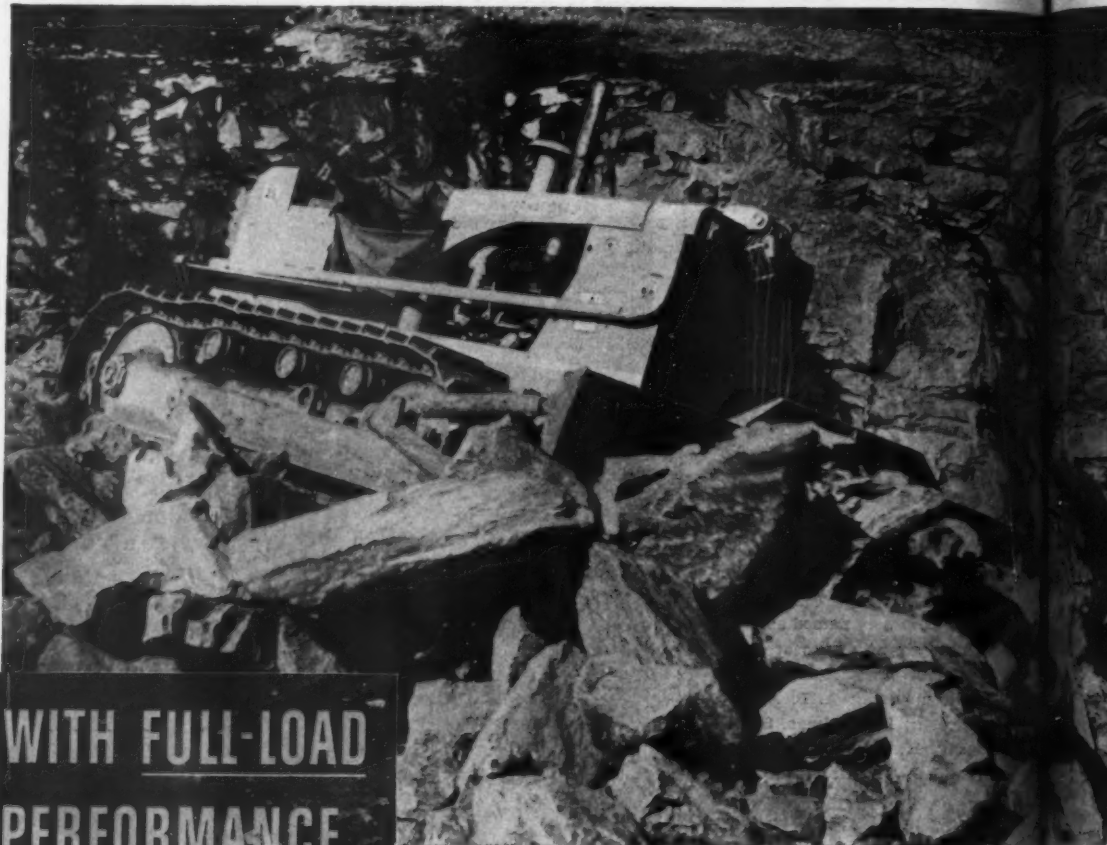
■ Walter H. Shealor is the new assistant director of sales, International Divisions of the Timken Roller Bearing Co., Canton, Ohio. Since 1953, he has been assistant general manager of the firm's Export Division.

New Wheel Truing plant

■ Wheel Truing Tool Co., Detroit, is constructing a new plant in Plymouth, Mich.

Covering 50,000 square feet, the plant will allow consolidation of company operations now carried on in four Detroit locations. It is to be completed by September, 1962.

Wheel Truing manufactures engineered diamond tools and bits, plus saws and blades for masonry or stone cutting.



WITH FULL-LOAD
PERFORMANCE
FULL TIME.....

Planet Power-steered..Hi-lo power outblade clutch-steered crawler

With exclusive "live track" Planet Power-steering, the International TD-25 makes full-load, full-power turns—or slams straight ahead with offset loads—where giant clutch-steered rigs slip and slue. With exclusive Hi-Lo, on-the-go power-shifting, the "25" gives you instant cut-to-fill matching power to condition. You roll up big loads—and keep 'em rolling. With exclusive International DT-817 engine wallop the "25" bulls along, 230 turbocharged hp strong—without "slow motion" lug-downs, even at high altitudes! Prove to yourself the planet-drive "25" clobbers all comers—outpushes or outpulls 'em up to 50%—and with standard equipment. Let your International Construction Equipment Distributor demonstrate.

▶ Dozing volcanic cinders for railroad ballast, this International TD-25 beats the combined production of two similar-sized clutch-steered crawlers on the same job! Reason: Hi-Lo power-shifting gives exclusive 4-speed torque-converter efficiency-range control. The "25" delivers heaped loads every pass! To defy "grinding compound" conditions, the "25" undercarriage has heavy-duty Dura-Rollers.





under 400 feet and costing more than \$500,000. The fabricator was Vinnell Steel, Irwindale, Calif. The Class III award, for bridges with spans under 400 feet and costing less than \$500,000, went to Madrow Bridge, above, Cowlitz County, Wash. The fabricator was Isaacson Iron Works. Stainless steel plaques will be affixed to these



top three winners. There were also twelve honorable mentions in the competition, which was limited to bridges opened in 1959. First honorable mention in the Class I category went to the American Rapids Bridge, above, located at Niagara Falls. Bethlehem Steel was the fabricator.



Even with an enormous offset load of shot rock there's no "bank-nosing," no sluing. The TD-25 operator simply runs the load-side track in high-speed range—the other in low-speed range. Result: full-capacity, straight-ahead performance—which the "25" also gives on benching, bank-cutting, and side-casting! In the same way, you make full-load turns—because Planet Power steering eliminates "dead-track drag!"

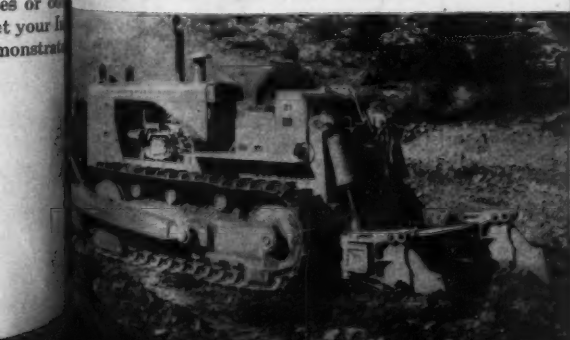
With Hi-Le on-the-go power-shifting you shift down, to dig hard material—shift up, to "run" with the load. And to make full-load turns without spillage, use Planet Power steering: down-shift the turn-side track, and you've got it made! When push-loading with the "25", you maintain solid contact on straight-away or curve—to speed heaping the bowls and get gear-higher "kick-outs!"



Hi-le power-shifted "25's" ere crawlers up to 50%!

the Inter-
-or slum-
ch-steer-
go power-
atching
em rolling
the "25"
ut "slow-
o yourself
es or out
t your In-
monstrate

With the same 2-finger ease as on dozing or push-loading, you steer the TD-25 pulling heaviest drawbar tools. This "25" is deep-ripping "concrete-like" mountain clay that has to be shattered before dozer can move it economically. The "25" has the super undercarriage strength of double-box-beam track frames—for full-capacity performance.



**International
Construction
Equipment**

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois
A COMPLETE POWER PACKAGE

American Road Equipment names regional managers

The American Road Equipment Co., Omaha, Nebr., recently appointed three new regional sales managers. They are: George E. Smith, Jr., Merrill Sedgwick, and J. M. Leary.

Each of these men has had over 20 years of experience in the construction machinery field, both as retail salesmen for distributors and as district representatives for manufacturers.

Smith will handle the western territory; Sedgwick, the mid-continent; and Leary, the eastern states.

Engineering firm opens Dallas office

A new branch in Dallas, Texas, has been opened by Henningson, Durham & Richardson, engineering and architectural consulting firm of Omaha, Nebr.

Manager of the office is Robert E. Hogan. He recently headed his own engineering firm, doing design work for residential subdivisions. Formerly he supervised design and construction on waterworks, sewerage, paving, and drainage projects as an associate of a Dallas engineering consultant.

Henningson, Durham & Richardson also has offices in Colorado Springs and Phoenix.

Cyanamid division names

The Engineering and Construction Division of American Cyanamid Co., New York, N. Y., has added three new members to its staff.

Dr. Guy Jorquera, senior process engineer, was formerly employed by Olin Mathieson Chemical Corp. Thomas F. Moschetto, project engineer, was previously with E. I. du Pont de Nemours & Co.

Benjamin Doty, materials engineer, was with Crucible Steel.

Atlas Copco names

New sales engineers from Atlas Copco Pacific, Inc., San Carlos, Calif., are Richard J. Farnum and Edwin P. Montague.

Montague formerly worked for Yale & Towne Mfg. Co. in San Leandro, Calif. Headquarters for both men will be at San Carlos.

For more facts, use Request Card at page 18 and circle No. 262



PCI president Jacob O. Whitlock, Midwest Prestressed Concrete Co., Springfield, Ill.

Increase expected in prestressed work

With the theme "Prestressed Concrete—key to creative architecture and imaginative engineering," the Prestressed Concrete Institute held its sixth annual convention at the Statler-Hilton Hotel, New York City, September 27-30. The 663 delegates registered were told that prestressed-concrete sales in the next twelve months are expected to increase about 20 per cent over the present annual gross of nearly \$1 billion in this country. Speakers voicing this opinion

based their predictions on expanded government road and bridge projects, an increase in private plant construction, and more varied uses for prestressed products developed recently through research.

Speakers included prestressed experts from this country, as well as international authorities from Austria, Belgium, Canada, England, Italy, and the U.S.S.R. Their papers covered the design-flexibility and economics of prestressed concrete, ad-

vanced techniques and methods of production and use, and recent research findings. Suppliers of materials and equipment to the industry displayed their wares in 43 exhibits.

Outgoing president Randall M. Dubois reported at the opening business session that the PCI had grown during the past year from 847 to 780 members. Dubois, head of Freyssinet Co. in New York, is succeeded in the PCI presidency by Jacob O. Whitlock, Midwest Prestressed Concrete Co., Springfield, Ill. Robert J. Lyman, Atlas Structural Concrete, Inc., El Paso, Texas, is the new vice president. Robert A. Matthews, Precast Industries, Inc., Kalamazoo, Mich., is secretary-treasurer.

The directors include: Harold R. Hutchens, Carter-Waters Corp., Kansas City, Mo.; W. C. Givens, Capitol Prestress Co., Jacksonville, Fla.; Robert H. Singer, Ben C. Gerwick, Inc., San Francisco, Calif.; Harry Edwards, Leap Concrete, Inc., Lakeland, Fla.; Edward Schechter, Stresteel Corp., Wilkes-Barre, Pa.; Charles B. Kiesel, Jr., Raymond International, Inc., New York, N. Y.; Elmer D. Clark, Superior Sand & Gravel Co., Phoenix, Ariz.; and Ezra C. Knowlton, Utah Sand & Gravel Products Corp., Salt Lake City, Utah.

Ross H. Bryan, a Nashville, Tenn., consulting engineer, was appointed chairman of the Technical Activities Committee, succeeding Charles C. Zollman of Schupack & Zollman, Newtown Square, Pa.

Decade of progress

Progress in prestressing over the past decade was discussed by several speakers. John M. Kyle, chief engineer, Port of New York Authority, told the group that more than \$6 million worth of prestressed-concrete construction has been installed on Port Authority projects such as piers, tunnels, bridges, and airports. However, because of the "peculiar labor union conditions prevailing in the metropolitan area," he doubted whether any substantial over-all economy had been attained. He urged contractors and labor unions to develop a modus operandi under which prestressed products can be exploited to their full potential. With reference to restrictive building codes that exist in many cities, engineer Kyle advised the PCI "to make every effort to do away with any artificial barriers which result from outmoded practices or regulations. In brief, our infant industry, although it has achieved a third of a century of experience, still has growing pains."

In discussing "Europe's contribution to imaginative engineering," Prof. Daniel Vandepitte, University of Ghent, Belgium, referred to the employment of external cables in post-tensioning work in several European countries. He also mentioned

"Call FOSTER get pipe for piling...PLUS"



Order your pipe piles from Foster and you'll not only get the right type of pipe, in the exact diameter and wall thicknesses your job requires, but you'll get a big "plus." All deliveries are "fast" . . . on time. And where Foster's high-strength thin wall pile is your choice, you get your pipe piles cut to the exact lengths you need—so you'll have no wasteful cut-offs, and a fraction of the normal number of splices.

Foster's nationwide warehouses stock every kind of pipe for piling—economical thin-wall spiral-weld pipe, electricweld, lap-weld, and seamless pipe, in all diameters, and in a full range of wall thicknesses. We can supply pipe for practically every use—fabricated to your needs.

Here's another Foster "plus"—you can coordinate dependable, fast deliveries to allow you to meet any driving schedule. For every type of foundation pipe, for Rental Steel-Sheet Piling, Foster Lightweight Piling, H-Bearing Pile, Driving Accessories, and a wide range of highway and construction products, call your nearest L. B. Foster Company office.

For the new Piling Catalog CE-11 write or call **L. B. FOSTER CO.** Pittsburgh 30, New York 7, Chicago 4, Houston 2, Los Angeles 5, Atlanta 8, Cleveland 35.



Faster From Foster

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For more facts, use Request Card at page 18 and circle No. 263

Prestressed Concrete Institute is optimistic of growth at sixth annual convention

that in Germany several prestressed-concrete bridges have been built over rivers by cantilevering them out gradually from the supports toward the center of the span. In this method, all scaffolding was eliminated. The construction of prestressed-concrete suspension bridges in his own country was discussed by Prof. Vandepitte.

Dr. Bruno Freibauer, an Austrian engineer, reported on the use of prestressed-concrete pavements at the Vienna Airport. A pretensioning system was used in the longitudinal direction, and a post-tensioning system in the transverse direction. The installation, however, was on a modest scale. Carl Renz and Phillip Melville, U. S. Army Corps of Engineers, described such pavements as have been completed in this country, although this type of construction is still rare in the U.S. The few installations, experimental in nature, are at military bases. Dr. Lev Zetlin, New York consulting engineer, described a portable abutment, devised for U. S. Navy bases, which permits the construction of a continuous pavement prestressed in two directions. Also with this abutment, the spacing between joints may be as great as 1,200 feet, and the concrete may be laid with conventional paving equipment. With pretensioned pavement, the slabs can be made thinner than in a post-tensioned pavement.

Russians speak

Two Russian engineers from the U.S.S.R. Academy of Construction
(Continued on next page)



Ben C. Gerwick, Jr., president, Ben C. Gerwick, Inc., San Francisco, Calif.

Prof. V. V. Mikhailov, D. Sc., Chairman of Commission, Academy of Construction and Architecture, Moscow, U.S.S.R.



Discussion of tensioning materials for prestressed concrete is under way at the Roebling display of the Trenton, N. J., firm.



Master Builders Co. of Cleveland, Ohio, is emphasizing its product, Pozzoloth, at the PCI exhibit.

5625 Sq. Ft.



Speed in Forming Symons Steel-Ply Forms ... Keys Rocket Progress at Vandenberg Air Force Base

By discarding traditional forming methods in favor of prefabricated, lightweight, Symons Steel-Ply Forms, a heads-up piece of construction planning has reduced time and cost estimates for a 25,000-yard concrete job at Vandenberg Air Force Base, California. The average small 10-man carpenter gang erected up to 5625 square feet in a day.

96 percent of the 80,000 square feet of total forming area was completed with Symons Steel-Ply Forms, fillers, corner pieces and necessary hardware. About 20,000 square feet of forms, re-used, formed the total surface. The forms were used successfully for haunch building, forming suspended floor slabs and beams, all types of walls, heavy mass concrete, and they were even used on one side of the flame-bucket pour.

Advance detailing and shipment of forms from stock saved at least a month's valuable carpenter-gang time in getting the job under way. Complete Vandenberg story will be sent upon request. Symons Steel-Ply Forms can be rented with purchase option.

**NEW
Extension Angle**
12" long with detail on each end for connection to Symons Steel-Ply Panels and Fillers. Designed for 3/4" plywood facing.
COMPLETE INFORMATION AVAILABLE ON REQUEST

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FORCED-AIR Heater New... Revolutionary!



1/4 THE COST!

Produces 70,000 to 125,000 BTUs per hr. Over 600 cu. ft. of CLEAN HEAT per min.

Only 1/4 the cost of conventional forced-air heaters, yet equal in performance.

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Produces more radiant heat! 85,000 BTU output

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LPs available with Automatic or Manual Controls. (Manual model shown here.)

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MORE SAVINGS FROM SYMONS

For more facts, circle No. 265



Leschen strand for prestress-concrete products was the highlight at the display of the Wire Rope Division of H. K. Porter Co., Inc., St. Louis, Mo.



At the Rogers Brothers Corp. booth, "The ultimate in trailers" was featured by the Albion, Pa., firm. A model of an extendible high-flat trailer was demonstrated.



A display of engineered tying devices for concrete construction is presented at the booth of Richmond Screw Anchor Co., of Brooklyn, N. Y.

(Continued from preceding page)

and Architecture, Moscow, addressed the convention. Dr. B. G. Skramtaev described how the Russians use the electrothermic method of pretensioning bar reinforcement of precast reinforced concrete. They combine this stretching by electrical heating with the usual mechanical tensioning in order to reduce wire breakage. This method also requires less force in pretensioning the wires.

Prof. V. V. Mikhailov was introduced by Dr. A. Allan Bates, Portland Cement Association, as the author of the first book in the world (1933) on prestressed concrete. The Soviet scientist discussed "Recent developments in automatic manufacture of prestressed members in the USSR." Keynote of his paper was the ever-increasing use of mechanization and automation in manufacturing prestressed-concrete elements in his country. Prof. Mikhailov asserted that a relative saving of almost one-third of the labor costs is realized with high-mechanization procedures. This involves continuous concrete prestressing, and the development of casting methods by vibropunching, vibrorolling, and vibropressing. In such operations, an automatic production line can turn out nearly 6½ million square feet of floor panels annually. Eight operations on the line are done in three to four minutes.

The Russians brought with them



Ed Brush, Soiltest V.P., watches attentively as shapely Joan Scott pumps away to break concrete test cylinder.



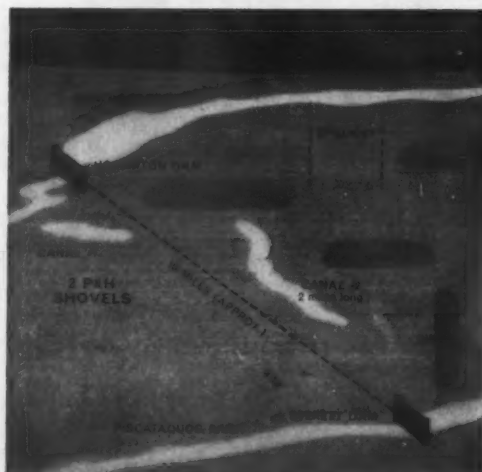
"We need top yardage...we chose Ma

...PERINI CORPORATION, Framingham, Mass

Warren H. Pettengill, Project Manager, reports—
"Our two 4-yard P&H shovels give us faster, smoother work cycles... more yardage at the end of the day. This is important on a project that will take 3 years to complete, covers an area of 65 square miles and involves almost 7 million yards of rock, boulders, gravel and earth."

2 P&H Shovels Team Up On Excavation—Keep Haul Units Hustling

Warren Pettengill used his two P&H shovels as a team to handle the excavation on Canal No. 1. He found that both 4-yard P&H shovels maintained a 20-second work cycle... and loaded out the 17-yard capacity haul units in 4 passes. Both P&H machines, equipped with Magnetorque Drive for swing and propel, gave him faster and smoother work cycles... more precisely controlled starting and stopping for spotting loads over trucks... permitted his operators to maintain 20-second work cycles all day long without tiring them out.



Drawing shows the overall construction area and details the nine separate phases of operation on this project.

for presenting to the PCI three films showing prestressed-concrete developments in the U.S.S.R. The films were 35 mm and, according to the New York City code and labor-union regulations, no film over 35 mm in size can be shown unless a projection booth and a licensed movie operator are employed. Hotel facilities were inadequate for such requirements, so the delegates missed the Soviet film festival.

At a session for prestressed producers, Ben C. Gerwick, Jr., of Ben C. Gerwick, Inc., San Francisco, discussed the development of extrusion methods and mechanization in this

country. Harry H. Edwards, Leap Concrete, Inc., Lakeland, Fla., also spoke on that subject, predicting that the industry will soon be producing hollow-score slabs on a mass scale by extrusion. He commented that the two biggest problems facing producers are: (a) materials handling and (b) system of forming. Leap believed that the use of horizontal slip forms, similar to those employed in road paving, would be advantageous to producers. With such equipment, he felt, the popular roof-plank section could be mass-produced on a large scale.

Robert Baker, chief engineer, Florida Prestressed Concrete Co.,

Tampa, described, with the help of a film, the method used by his firm in mass-producing prestressed railroad ties. With a fully mechanized machine, 45 feet long and 18 feet wide, a tie is turned out every 26 seconds. Baker expects to shorten the production time so as to improve the rate per hour. Only five workers are used in this production cycle.

Sales and marketing was the topic at another producers' session, during which an advertising and promotion campaign was suggested in order to cope with the competition from other structural materials.

THE END

Smith Engineering news

■ Donald D. Barnes, while retiring as president of Smith Engineering Works, a division of Barber-Greene Co., Aurora, Ill., will continue to serve as a member of the B-G board of directors. Gerald L. Smith is the new president of the division.

Barnes, who joined the firm in 1919, was recently honored at a "recognition" dinner. Before becoming president in 1952, Barnes served as Chicago and New York District sales manager, sales manager, and executive vice president.

New book discusses steel structure design

■ "Design of Steel Structures," by Boris Bresler and T. Y. Lin, presents a rational approach to the design of steel structures, correlated with current design practice. It is based on an understanding of the elastic and plastic behavior of members and connections. Such practical considerations as safety, feasibility, and economy are emphasized.

Structural problems are solved by the use of basic mechanical principles, and structural design codes are thoroughly discussed. Practical solutions to design problems are illustrated with excerpts from design calculations of existing buildings and bridges. Problems are supplied at the end of each chapter.

The 710-page book, profusely illustrated with diagrams, tables, and charts, is available from John Wiley & Sons, Inc., 440 Park Ave. South, New York 16, N. Y., at \$9.75 per copy.

Phosphorescent helmets

■ Malan Construction Corp., New York City, has issued phosphorescent safety helmets to its field force at the General Motors plant at Wilmington, Del. The hard hats emit a blue-green glow in darkness, making it easier to see men working in dark areas or deep excavations.

The reinforced Fiberglass hats were purchased from the Fibre-Metal Products Co., Chester, Pa. Malan is planning to use the phosphorescent helmets on all of its projects.

Handy reference book is aid for engineers

■ The "Engineer's Vest Pocket Book" is available from Ottenheimer Publishers, Inc., 4805 Nelson Ave., Baltimore 15, Md., at 90 cents per copy.

This 192-page booklet contains 47 important charts and 250 main items covering such topics as the properties of structural steel, thermal stress, and cost estimating.

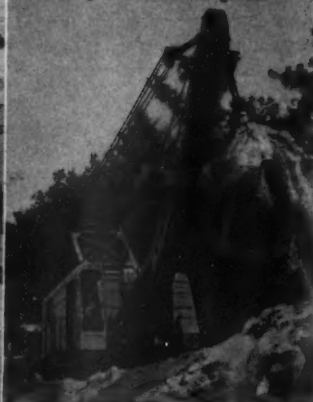
All the material in the 2½ x 5½-inch book is included under 12 marginal index headings: mathematics, building, mechanics, heat, hydraulics, pipes, electricity, surveying, costing, mining, chemistry, and miscellaneous data. There is also an alphabetical index and an index of charts and tables.

For more facts, use Request Card at page 18 and circle No. 266

Magnetorque-equipped P&H shovel digs boulders and earth as it makes a complete work cycle every 20 seconds.



P&H works from a bench as it loads hauling unit on a lower grade.



P&H rapid-reversing chain crowd provides faster shovel retract and ease of operation — means faster, more accurate digging.



se Magnetorque-equipped P&H shovels"

Massachusetts, \$8,000,000 Merrimac River Flood Control Project, Hopkinton, N. H.

Top Yardage, On-Schedule-Performance
Key To Operation

This flood control project involves many phases of operation, each dependent on the other. Roads must be relocated. Excavated material from canals and spillway must be used as fill in the construction of dikes and dams. A slowdown of yardage or a machine breakdown would seriously hamper coordinated scheduling and construction. Perini's P&H rigs have the built-in ruggedness and durability to stay on the job month after month with minimum downtime for servicing.

P&H Shovels Maneuver Well in Mud

Excavation has been carried out in soft, wet ground that has mired other equipment. The two P&H shovels with single roller crawler assemblies and 36" wide crawler shoes have been able to maneuver without trouble and travel rapidly from one location to another. This is extremely important on this project where continuous production is vital to the overall operation.

For complete information on this job, write for Case History 130 or contact your P&H dealer for detailed facts on the complete line of P&H power cranes and shovels.

HARNISCHFEGER

Milwaukee 46, Wisconsin



A new way to lay big pipe

by BILL ALLEN, field editor

A new use for a standard piece of equipment is speeding production on a big-inch water line in Milwaukee. The contractor, W. J. Lazynski, Inc., Milwaukee, makes use of a traveling overhead crane for laying the 21-ton pipe lengths.

The 30-ton-capacity Travelift is most commonly seen handling concrete girders at prestress plants. This is the first time it has been known to be used for laying pipe.

The system has several advantages. The rig is lightweight compared to the 80-ton-capacity crane that would have been needed. And working beside the trench, a heavy crane would subject the wood sheeting to dangerous pressures.

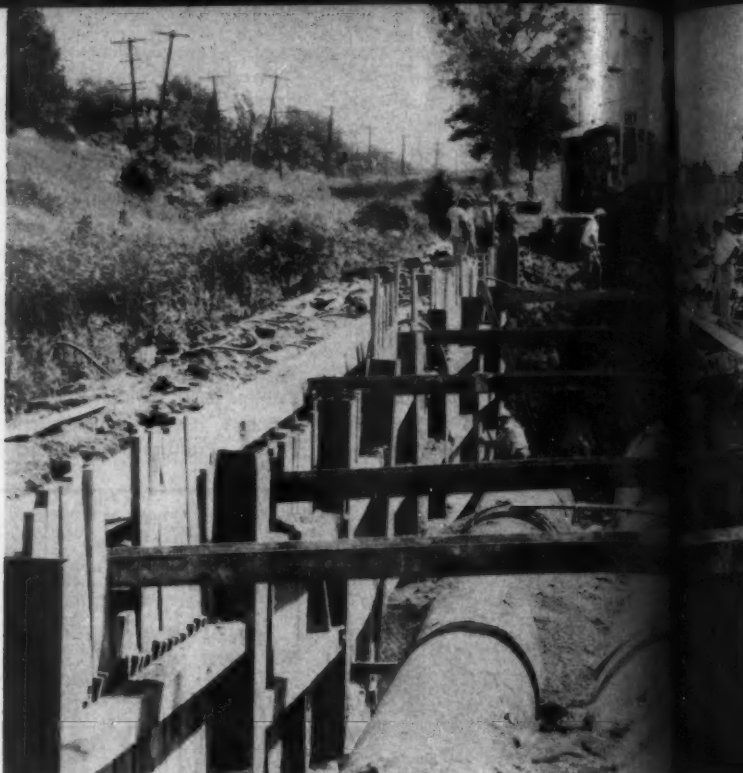
With the overhead rig, pipe handling is safer and more efficient. The operator can always see where the pipe is being placed. The overhead crane not only sets the pipe in place, it also carries the pipe from the stockpile area to point of placement. Since the rig travels above the trench, it does not block equipment on the access road alongside the trench.

The big overhead crane has a lot of pipe to lay. Some 7,000 feet of 84-inch prestressed-concrete pipe must be set in the ground alongside 2,600 feet of 48-inch line. (These represent only the two major items.) The 84-inch line will carry raw water from the Texas Ave. Intake Pumping Station to the 6th St. and Howard Ave. Filtration Plant. The 48-inch line will be part of a future distribution system. This leg of the line is being let in three contracts; Lazynski has the first.

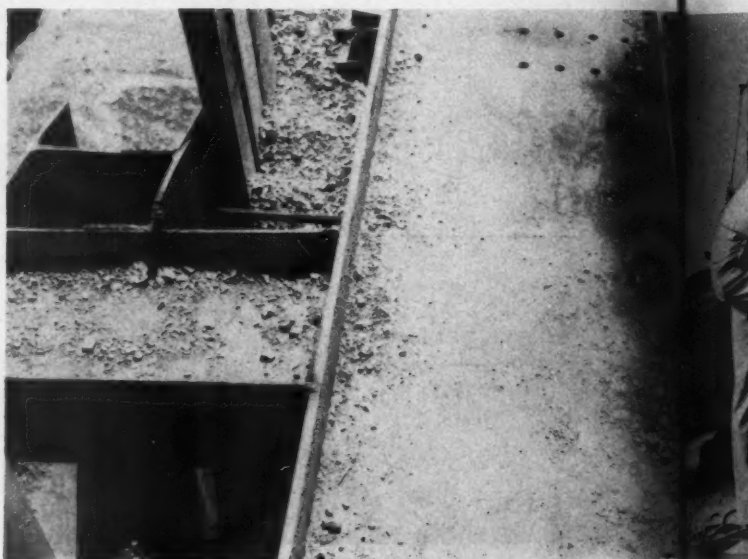
The water line was designed by the Bureau of Engineers of the city of Milwaukee, and the installation is under the supervision of the Construction Division of the bureau. The distribution system is part of a multimillion-dollar plan to improve the city's water supply. Already nearing completion is a \$3.5 million water-intake structure in Lake Michigan. Raw water from this intake will be pumped to the filtration plant through an 84-inch prestressed-concrete line. Lazynski is building a portion of this line. The contractor's superintendent is Jim O'Loughlin. Foremen are Alex Pestka, John Bray, and Mike Kovatch. For the city, Paul Heritsch and John Tischer are resident inspectors, and Robert Hirsch is district supervisor.

The 16-foot lengths of pipe are being fabricated by Lock Joint Pipe Co. at its yard in South Beloit, Ill., and trucked to the site. The pipe contains a steel core with concrete on both sides, making a wall thickness of 8 inches for the prestressed 84-inch pipe.

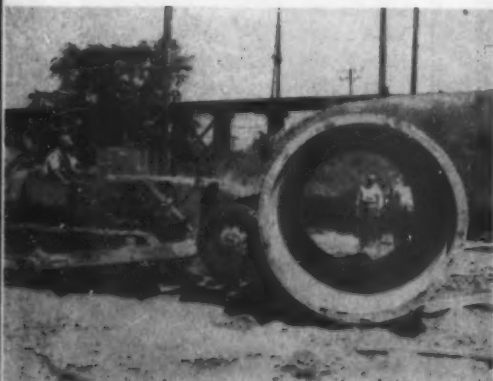
Production on the job was speeded up as crews became more familiar with their duties. For the double line, the men lay as many as ten 16-foot lengths of pipe per day—5 lengths each of the 84 and 48-inch lines. They average eight lengths per day.



The laying of the 84 and 48-inch lines follows close behind excavation with the backhoe. The 12-inch I-beam cross braces, about 20 feet apart, are welded to the tracks for the Travelift. The tracks, in turn, are tied to the soldier beams. The Travelift rides these tracks to lower the 21-ton 16-foot sections and smaller ones.



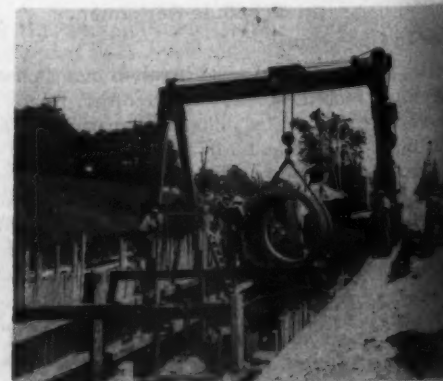
This is the trench bracing arrangement, showing 24-inch I-beam track welded to 12-inch I-beam cross bracing. The 3/4-inch rod ties wide I-beam track to the soldier pile. Use of scrap steel for the track cut costs for the contractor.



An 84-inch section of prestressed-concrete pipe is pushed to the Travelift by an Allis-Chalmers HD-9 with two rotating rubber-tire bumpers. It operates directly on the backfilled trench.



The Travelift prepares to pick up an 84-inch-ID 21-ton length of pipe. The 30-ton rig, modified by the manufacturer, was geared down so that it could climb hills and given friction brakes so it could descend steep grades.



After moving on its rubber tires along the I-beam tracks, the Travelift begins lowering the section into place. The distance the rig traveled was kept as short as possible; generally it did not exceed 300 feet.



With the
ed to the
The Tran-
s.



To reduce hand excavation, a Twin City backhoe digs a 15-inch-wide trench along each side of the twin pipeline route. With soldier beams in place and trench backfilled, the beams are driven until tops are 3 feet above ground.



Before major excavation is done, ends of I-beams are welded together to extend the track for the Travelift. The 24-inch I-beams are supported by wooden blocks as a Hobart welder makes the weld.



As excavation of the 17-foot-wide and about 22-foot-deep trench is done by a crane, crews with a Thor air-operated hammer drive the hardwood sheeting almost to the bottom. The soft clays are wasted.



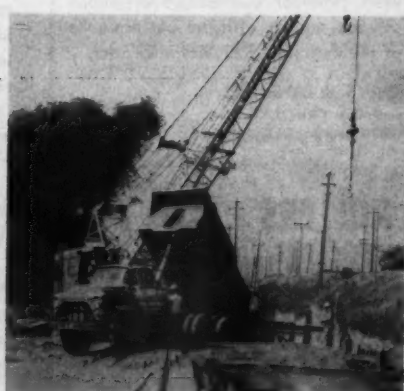
Men shovel dirt out from beneath the ends of wood sheeting to make it easier to drive. Advance trenching and backfilling reduced this slow hand work. The wall of sheeting consists of oak 2 X 6's held back by horizontal 8 X 8's wedged into the soldier beams.



Crushed stone cascades to the bottom of the trench to make a bed for the two pipelines. In wet areas, the trench had to be excavated several feet below grade and built up with the 1-inch limestone. Generally, a 6-inch blanket is put down.



The operator has a good view of the pipe being lowered. A hydraulic crane pulls the section home; a neoprene gasket seals the joint.



A few hundred feet to the rear, a GMC with Hercules body, unloads gravel into the trench. The Koehring 605 pulls sheeting. It also pulls soldier piles with a Vulcan 400A extractor.



A U-shaped bracket on a line from the Koehring 605 grabs the tops of the hardwood sheeting for the extraction job. Horizontal sheeting was used first, but it was found too difficult to pull.



No down time because of faulty lubrication—that's the record for the joint venture on the Tuscarora Pump Generating Plant at the Niagara Power Project in New York State. Euclids on the job keep rock moving at a rate of 1,000 yards per hour.

Maintenance

Efficient lube schedule keeps rigs moving on Niagara Power Project

SAVE MONEY
with the Galion
Model 503 Grader



Street Maintenance in MISSOURI



Road Maintenance in OHIO



Spreading Blacktop in WISCONSIN



Grading Housing Site in WASHINGTON



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The model 503 is economical in first cost, economical to operate, economical to maintain—and small enough to work efficiently in areas too confined for a large grader. Yet the 503 has sufficient weight and power—with "big grader" features and attachments—to do a wide variety of jobs with speed and profit.

The Galion 503 Motor Grader is available with a gasoline or diesel 58 hp engine. It has positive 4-wheel tandem drive and full hydraulic control. Extra large positive traction tires are same size front and rear.

Attachments for the model 503 include front-positioned hydraulic scarifier . . . booster power steering . . . hydraulic shiftable moldboard . . . leaning front wheels . . . hydraulic circle turn . . . stand-up height removable cab . . . snow plow . . . bulldozer . . . windrow eliminator . . . and creeper transmission (installed at the factory).



Backfilling Utility Line in COLORADO



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You will invariably find owners and users (whether contractors or public officials) happy with the performance of the GALION 503 Motor Grader.

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Name _____ Title _____
Firm or Dept. _____
Street _____ City _____ State _____

For more facts, use coupon or Request Card at page 18 and circle No. 267

Not one hour of down time was lost in six months because of poor lubrication of rock-moving rigs on the Tuscarora Pump Generating Plant job at the Niagara Power Project in New York State. Tuscarora Contractors, Inc., the joint venture handling the job was made up of The Arundel Corp., the L. E. Dixon Co., and the Hunkin-Conkey Construction Co.

All rock was being loaded by four shovels—two Bucyrus-Erie 88-B's with 4-yard dippers and two Northwest 80-D's with 2½-yard buckets. Rock was hauled away by 22 Euclid rear-dumps of 22 to 27-ton capacity. In a 6-month period, a crew of 1,300 men kept the \$4 million worth of equipment working to move some 1.3 million yards of rock—despite some unfavorable weather conditions. This meant keeping the new or reconditioned rigs working continuously, free of downtime for repairs.

When the maintenance program was being set up for the job, engineers from a major oil company were consulted to develop an effective system of lubrication for the 100 pieces of equipment on the job. They recommended not only the various lubricants to be used for each piece of equipment, but proper application intervals suited to the severe conditions on this job.

Time and money were saved by limiting the lubricants to seven products. This meant that fewer types of items had to be purchased, transported, and stockpiled. Less money was tied up in inventory.

This resulted in maximum efficiency. Lube trucks could carry sufficient quantities of each lubricant to service equipment in place, and there was less chance of using the wrong grease or oil.

The following lubricants were recommended:

1. One diesel-engine crankcase oil
2. One oil suitable for gasoline engines and torque converters requiring Type C fluid
3. Type A fluid
4. One multipurpose gear lubricant
5. One hydraulic oil
6. One oil for air compressors
7. One multipurpose grease

Using this selected group of products, lube schedules were easily met. Every 250 hours of operation, crank-

CONTRACTORS AND ENGINEERS



Gulflex A, a lithium-base multipurpose grease, is used on a Euclid that has pulled into the shop for its daily check. During peak excavation, all rigs were lubricated in the field every 8 hours. The 100 items of equipment at work were taken care of with only seven lubricants.



"Eucls" pick up diesel fuel at a job service station with underground tanks holding 12,000 gallons of diesel and 8,000 gallons of Good Gulf gasoline. Some 2 million gallons of diesel fuel is required for the job.

case oil and filters were changed in every engine. Automatic transmissions were drained and refilled. Fuel filters were replaced at every fourth oil change. All equipment was greased after every shift. Air cleaners were cleaned every 8 to 16 hours. To perform these services, 10 mechanics were employed on the day shift, 5 on the swing, and 5 on the graveyard shift.

Problems such as the quality levels of oils and greases to be used, their adaptability to changing requirements, and the consequent adjustment of greasing and crankcase oil change periods to conform to one schedule suitable for all equipment were handled with the use of multipurpose oils and greases with built-in safety margins.

With the proper crankcase lubricant, for instance, even the most severe working conditions on the job did not require lube changes more often than every 250 hours. Gulf Super Duty motor oil, a Series 3 lubricant tested and approved by the Caterpillar Tractor Co., was selected for diesels.

While all diesels do not need an engine lubricant of this type, the built-in safety factor offered has several advantages. There is only one oil to stock for diesels; one change schedule can be adhered to; and the possibility of putting the wrong crankcase lubricant in a diesel is eliminated.

THE END

Text on fluid mechanics

The derivation and application of the fundamental equations of fluid mechanics are discussed in "Elementary Theoretical Fluid Mechanics," by Karl Brenkert, Jr.

The 348-page book is divided into eight general sections. Subjects covered are fluid statics; conservation of matter and the Euler equation; momentum and angular momentum; conservation of energy; friction; dimensional analysis and model study; and potential flow.

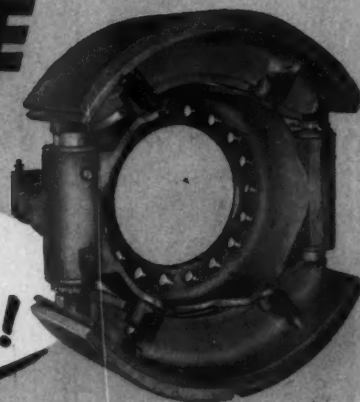
The book contains 374 problems, ranging in difficulty, and includes much calculus to demonstrate its use together with the general form of the fundamental equations.

The book, priced at \$7.50, may be obtained from the publisher, 440 Park Ave. South, New York, N. Y.

It's here! New **HEAVY-DUTY STOPMASTER BRAKE**



Biggest News in Brakes for Off-Highway Equipment in over 30 years!

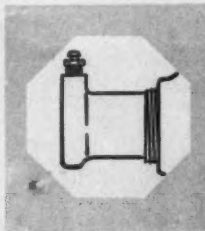
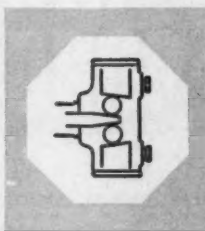


To meet the growing need for more versatile, more compact, more dependable braking equipment in off-highway operations, Rockwell-Standard® now presents a completely new concept in brake design.

This new brake is specifically engineered for use on scrapers, prime movers, earth and rock wagons, dump trucks and similar construction vehicles. Available in 17, 20 1/4, 22 and 26-inch diameters and in 4 to 10-inch widths.

If it's a Stopmaster you get . . .

- Reduced Operating Cost
- Less Heat Fade
- Greater interchangeability of parts
- Heavy Duty 1/4 inch tapered Econoliners®
- Adjustment frequency reduced
- Rugged Design
- Extended Drum Life



Only the Heavy-Duty Stopmaster offers:

"BALANCED DESIGN" AND NEW ACTUATION PRINCIPLE

Results in improved braking performance and lower operating temperatures. In Dual-Actuation design, both shoes do an equal amount of work. Balanced shoe-action assures more dependable service; faster, surer stops.

HYDRAULICALLY OPERATED

New hydraulic cylinders offer more compact design and increased mounting flexibility for better protection. External cylinders, located outside of drum, eliminate heat damage and overheating of fluid. For air-over-hydraulic systems, air volume requirements are considerably less. Actuation time is reduced, with faster response of hydraulic system. The Stopmaster Brake is well suited for straight hydraulic, air-over-hydraulic, or vacuum-over-hydraulic operation.

Another Product of...

ROCKWELL-STANDARD CORPORATION



Brake Division, Ashtabula, Ohio

For more facts, use Request Card at page 18 and circle No. 268

Cable spinning for Throgs Neck Bridge



Catwalks of woven-wire fencing roughly outline the shape of strands being spun for the cables of the Throgs Neck Bridge that will link the Bronx and Queens in New York City.



This is the Queens anchorage, with the 65-foot sheave tower, extreme left. On each side of the anchorage are 37 eyebars—one for each strand in a cable—that anchor strands.

Contractors and Engineers staff article

Cable-spinning operations—something New York City has not seen in years—turned out to be a smooth job during construction of the Throgs Neck Bridge that will link the boroughs of the Bronx and Queens.

The cables of the bridge consist of 37 strands, each made up of 296 galvanized wires measuring .196 inch in diameter. In all, there are 10,952 wires per cable.

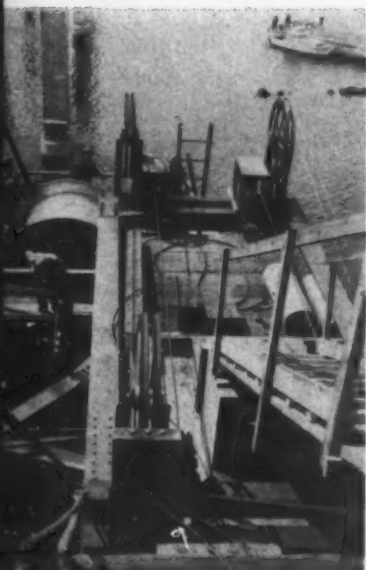
The American Bridge Division of U. S. Steel Corp., the contractor for this phase of the job, began work early this year and in two months erected identical spinning equipment

on each anchorage while two catwalks were being strung out over the towers from anchorage to anchorage.

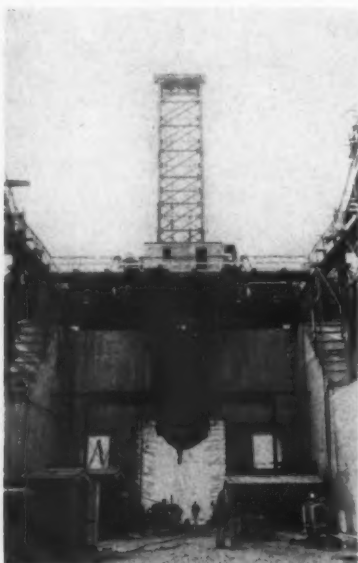
Spinning equipment

Equipment on each anchorage consisted of a 65-foot sheave tower equipped with four stationary sheaves, four counterweighted floating sheaves, and racks for the storage of eight reels of wire. There were four reels on each side of the sheave tower—together with braking attachment on each reel—and intermediate sheaves to direct the flow of wire from the sheave tower to the spinning wheel that traveled between anchorages. Manually operated brake

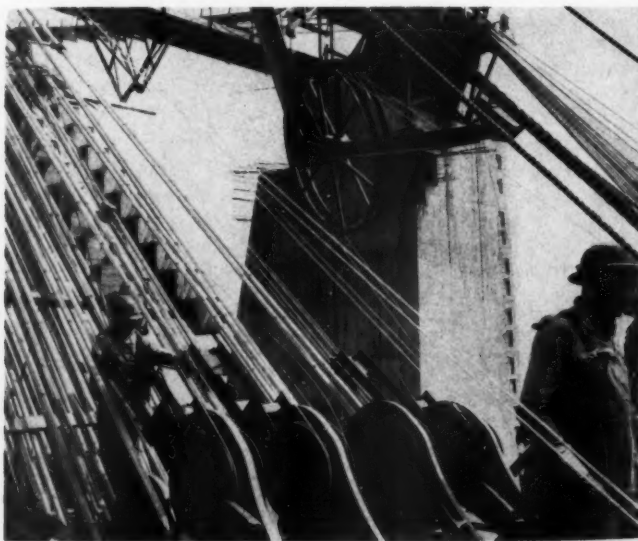
Dead ends of wires are clamped to the catwalk ahead of the anchorage saddle casting; running ends are looped under a pair of shoes attached to an eybar before the 4-foot-diameter spinning wheel takes off with them across the bridge towers to the Bronx anchorage.



Sheaves between the sheave tower and platform surrounding the eyebars take the flow of wire from the reels and direct it to the sheaves at the top of the tower.



Wires go through sheaves atop the tower, and to counterweighted floating sheaves that keep wires taut while fed to intermediate sheaves and the spinning wheel.



CONTRACTORS AND ENGINEERS

assemblies at the reels allowed for adjustment and maintenance of a constant unreeling speed. Counterweights helped each of the floating sheaves maintain the proper tautness on wire being fed to the spinning wheel.

At any one time, only two reels per anchorage setup were required during spinning. Another installation required for spinning was the two tramway frames—on each of the anchorages and towers, to support the 1-inch-diameter spinning-wheel cables.

Reels to wheel

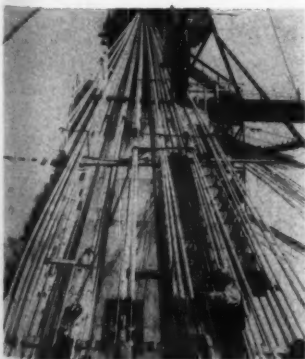
Wires, taken from reels on opposite sides of the sheave tower, were run through intermediate sheaves; over the top tower sheaves; and under the lower floating, counterweighted sheaves. From here the pair of wires was passed through a series of sheaves and up to the working platform surrounding the tops of the eyebars.

The dead ends of the wires were then clamped to the catwalk ahead of the anchorage saddle casting, and the running ends were looped under the pair of shoes attached to the eyehar. From here, the pair of wires was looped over the 4-foot-diameter spinning wheel, which was capable of handling two wires at a time. While this was being done, the same operation was in progress at the opposite anchorage with another spinning wheel; spinning was done on only one cable at a time.

Both spinning wheels traveled at the same speed—about 750 fpm—across the tops of the towers to reach the opposite anchorages at exactly the same moment. The time it took the spinning wheels to run between anchorages averaged 6 to 7 minutes; during one 7½-hour shift, 60 trips were made to break the record for such work on similar bridge spans.

As soon as a spinning wheel reached an anchorage, the pair of wires looped around the wheel was

(Continued on next page)



The spinning reels for the east and west cables pass in the center of the bridge. While wires are delivered to the Bronx anchorage, 2,190 feet away, this wheel comes in to the Queens anchorage with two wires.



With the placement of the primary closing steel assemblies for the 3,400-foot Queens approach viaduct by Bethlehem Steel Ironworkers, the bridge has a continuous twin ribbon of steel. Interior steel work is currently under way.

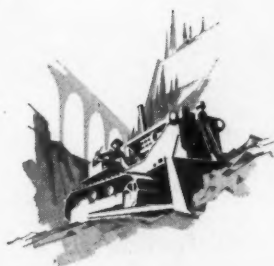
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PISTON RINGS ARE BUILT
TO TAKE IT

EATING AWAY DROP BY DROP

Moisture and acids formed by combustion can eat away piston rings, much as they eat away mufflers and tailpipes.

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Perfect Circle rings are built to take the toughest engine wear. Insist on Perfect Circles—the most preferred piston rings in all the world.

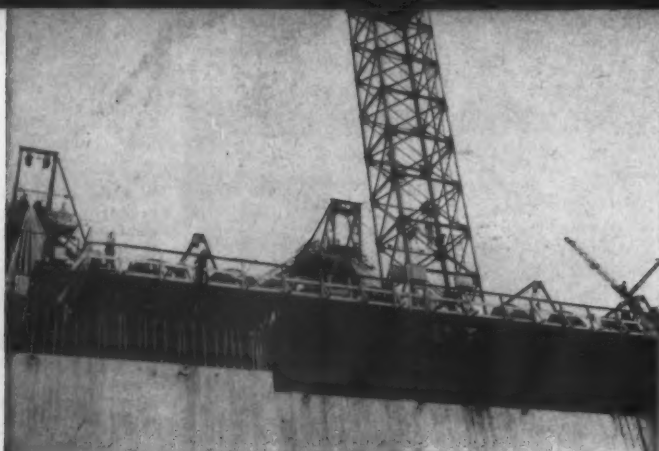


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HAGERSTOWN, INDIANA • DON MILLS, ONTARIO, CANADA

For more facts, use Request Card at page 18 and circle No. 269



Four reels are located on each side of the sheave tower. Each side supplies one of the two wires carried by a spinning wheel to the Bronx anchorage.

(Continued from preceding page)

removed, twisted 180 degrees, and looped under the dual-strand shoe of the eyebar. This placed the live ends of the wires coming off the spinning wheel below and under the strand shoes. This facilitated removal of the wire slack and put the wire in proper position to loop over the spinning wheel on the following trip.

Wires adjusted

The wire was adjusted at the home end, or starting point for a pair of wires, by winching up on the live end at the opposite anchorage. The adjustment was carried back to the home end by means of winch points at the midpoints of the back span, main span, and home-end back span before a winch at the home anchorage removed the accumulated slack, which was then taken up in the sheave tower. At the various winch points, the dead-end portions of the wires were dogged off as the spinning wheel passed by to maintain the adjusted strand shape. Four strands were spun at one time—two from one end and two from the opposite end of the bridge.

Splicing

After 296 wires were laid in each of the four strands, the wire in each strand was cut and spliced to the dead end previously clamped at the home anchorage. Ferrule-type splices were used to make this connection and to fasten the wires between reels.

The splicing was done by threading one wire with right-handed threads and the other with left-handed threads, then cutting the ends to a 45-degree bevel to allow adjoining wires to lock. The ferrule-type splice, having the two different threads, was used to bring the beveled wire ends together. The locked bevel ends prevent any possible twisting of the wires, which would allow the wires to unscrew from the splice. Because of these splices, each of the 37 strands for each cable consists of one continuous wire.

As each set of four strands was completed, it was compacted by a squeezing tongs and held at intervals by metal bands.

The preliminary adjustment of a completed strand into the cable alignment was done by shims and

hydraulic jacks at the individual eyebars holding the strand at each anchorage. The first strand adjustment was done by instrument to proper sag, and succeeding strands were adjusted by lowering them to the proper level as compared with the first strand adjusted. This formed the hexagonal cross section of a cable.

The strands were lowered into position by tensioning the strands to permit removal of shims and then releasing the tension. Final positioning of the strands was done at night when thermometers inserted into the strands indicated that all were at

a uniform temperature.

Once the 37 strands were in place, the hexagonal cable was compacted to a circular cross section having a diameter of 22½ inches. One of the final operations, to take place after most of the dead load of the structure is erected, is the wrapping of the cables with a No. 9 galvanized wire.

The bridge, scheduled for completion early in 1961, will provide a direct link between the Bronx and Queens and with a system of expressways and parkways, connect the Long Island Expressway and the New York State and New England thruways.

TURN TO FULL-POWER STEERING

Only Allis-Chalmers all-hydraulic motor scrapers give you full-power steering... give you more steering power at full 90-degree position than others can muster straight ahead!

Here's why! Every Allis-Chalmers motor scraper has:

- ... An independent hydraulic system *just for steering*
- ... *Double-acting* steering jacks
- ... Positive leverage "never-over-center" linkage design

These three advantages enable every Allis-Chalmers motor scraper to *recover faster from full 90-degree turns than any other motor scraper*. In addition, *two-stage steering* control provides fast, non-stop turns with only a 1/6 turn of the steering wheel. A slight turn of the wheel gives you responsive steering for steady, accurate handling at high haul road speeds.

For everything you want in big-production motor scrapers, turn to *full-power steering—double-acting bowl jacks—highest apron lift and forced ejection—KON-TORK differential*... good reasons why you can tackle any size job and be confident of top-notch production. When you put any Allis-Chalmers motor scraper in your spread—from 155 to 340 hp... 10 to 30 yd—you'll see the difference *on the fill*. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

KON-TORK is an Allis-Chalmers trademark.



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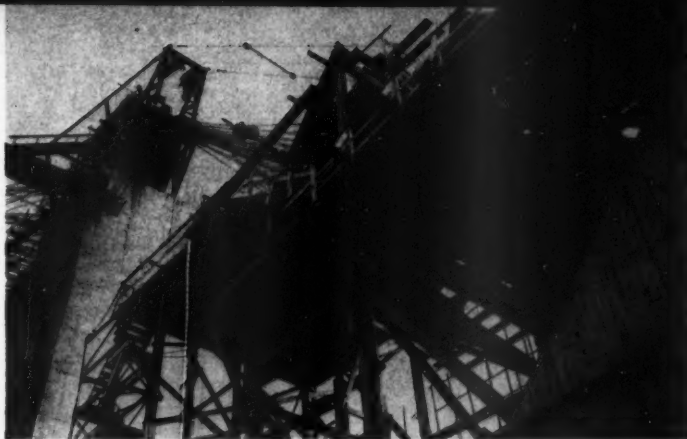
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From anchorage to anchorage, the bridge is 2,910 feet long, having a main suspension span of 1,800 feet and two back spans of 555 feet each. Including over-water approaches, the entire length is 13,953 feet.

Personnel

A. B. Drilling is the superintendent for American Bridge. Amman & Whitney, New York City consulting engineering firm, is supervising construction on the suspended portion of the structure. The Triborough Bridge and Tunnel Authority is the owner.

THE END



Strands for the east cable stretch across the Queens tower and to the eyebars anchoring them. This entire area will be enclosed by concrete after the platforms surrounding the eyebars are removed.

ALLIS-CHALMERS GIVES YOU
MORE STEERING POWER
AT FULL 90°...

...THAN OTHERS DO STRAIGHT AHEAD

Names in the News

Engineer Corps news

The new deputy division engineer for the South Pacific Division of the U. S. Army Corps of Engineers is Col. Robert R. Robertson. He comes to San Francisco from Washington, D. C., where he was staff officer directly responsible to the chief of engineers for public information.

Col. Robertson will supervise military construction and will maintain close association with flood-control and navigation work.

A. Frederick Griffin, special engineering consultant, North Central Division, Chicago, was recently hon-

ored at a luncheon at the Western Society of Engineers. Griffin, who had been with the Corps since 1926, retired this year.

He made major contributions in the development of the upper Mississippi River navigation system and in the design and construction of the St. Lawrence Seaway.

Louisiana names highway director

The new director of the Louisiana Department of Highways is Ray W. Burgess. He will succeed R. B. Richardson, who has resigned. Burgess

Ray W. Burgess, new director of the Louisiana Department of Highways.



had been director of public works for the city-parish government in Baton Rouge for more than five years. Prior to that, he was an engineer on Louisiana projects for Stone & Webster Engineering Corp.

ASCE elects officers

The American Society of Civil Engineers has elected nine new officers for 1961. Headed by president-elect Glenn W. Holcomb, two vice presidents and six directors took office at the society's annual meeting in Boston last month.

Holcomb, the 92nd president of the society, heads the department of civil engineering at Oregon State College, Corvallis.

The vice presidents, elected for 2-year terms, are: Donald H. Mattern, Knoxville, Tenn., vice president for ASCE's Zone II, covering the southeast section of the country; and William J. Hedley, St. Louis, Mo., vice president for the central area.

Directors, elected for 3-year terms, are: Roger H. Gilman, Plainfield, N. J., District 1, including metropolitan New York and areas outside North America; Henry W. Buck, Hartford, Conn., District 2, covering the New England states and some sections of Canada; and Earle T. Andrews, Berkeley Springs, W. Va., District 6, including Maryland, Pittsburgh, Virginia, and West Virginia.

Other directors are: John B. Scalzi, Cleveland, District 9, covering Ohio, Indiana, and Kentucky; John D. Wat-

son, Greensboro, N. C., District 10, covering Alabama, Florida, Georgia, Tennessee, and the Carolinas; and Harmer E. Davis, District 11, encompassing California, Arizona, Nevada, Utah, and Hawaii.

Burns & Roe names

Burns & Roe, Inc., engineering and construction firm of New York City, has named William G. Carlson director of defense and aeronautical projects. The move is designed for more efficient control of project work.

William G. Carlson, director of defense and aeronautical projects for Burns & Roe.



Carlson was formerly assistant director of the company's Defense and Aeronautical Facilities Division and has directed engineering work connected with the Nike-Zeus anti-ICBM prototype installations in New Mexico.

E. Bradford Riply has been appointed supervising mechanical engineer by the firm. He will coordinate mechanical design of power plants and projects. He had previously been chief engineer for the Connecticut Light & Power Co.

Kaiser names Matthias

Kaiser Engineers, Oakland, Calif., recently appointed Franklin T. Matthias manager of heavy construction. He will have charge of all the company's heavy construction in the United States and Canada.

Matthias had previously been chief

cut your cleaning time 80%



with MALSBARY HPC*

*HYDRAULIC PRESSURE COMBINATION cleaner, the power-packed machine that gives you, the user, 5 times greater cleaning ability than a conventional steam vapor cleaner. Only HPC produces the explosive 300-400 psi and uniform solution pattern needed to effectively blast away caked mud, grease, road oils, old paint, ice deposits. This efficient cleaning force comes from combining thermal and hydraulic pump-produced pressures—a Malsbary patented device. With HPC you do as much work in 1½ hours as you can do with a steam cleaner in 8 hours!

You have the task of maintaining big equipment... keeping it on the move and producing... you know saving downtime is the same as saving money. Join more than 6000 others now profiting with Malsbary HPC. Fill in the coupon today, and let us show you how HPC gets the job done—fast and satisfactorily. No obligation... and there's money in it for both of us.

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Name _____ Position _____

Company _____

Address _____

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NEW-BURCH Dump Body Mounted SPREADER



A unique development in box-type spreaders

All operations are controlled by driver in the cab. He raises or lowers the spinner for variable widths of spread, and controls the volume flow of materials.

Spreads full width or half width on either side.

- Reliable 20½ hp motor.
- Bar flight conveyor belt.
- Precision built, oversize reduction worm gear drive.
- Sealed automotive type reduction gear operates spinner.
- Heat treated gears and shafts.
- Roller or ball bearings throughout.
- Hopper supported by heavy structural channel sills and has a sturdy sectional top screen.

The BURCH Corporation
CRESTLINE, OHIO, U.S.A.

For more facts, use Request Card at page 18 and circle No. 272

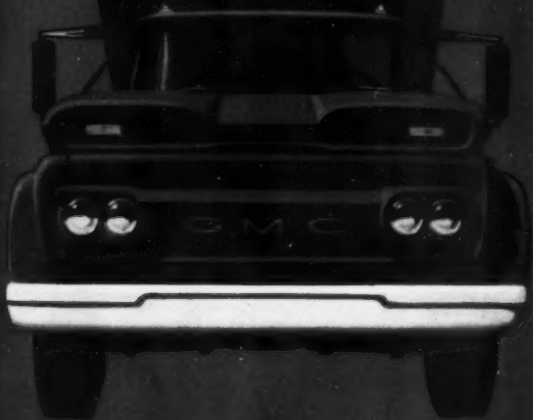
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From the Big
GMC Breakthrough
comes

THE TRUCK TRIUMPH OF THE 60's

Now producing more
economical, more
profitable trucking
operations as a result
of the greatest engine,
chassis and cab engi-
neering advances in
20 years!





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GMC TRUCKS

STAY ON THE JOB
ROUND-THE-CLOCK!

Only GMC Conventionals give you exclusive V-6 endurance, custom gearing and specialized strength throughout. Both of these 4000 Series, 105" BBC GMCs can be custom-fitted from standard factory options to your exact specifications to keep costs down, profits up. Choose from 3 exclusive V-6 engines, 34 axle-transmission-engine combinations, plus anything needed in the 19,500-23,000 lbs. GVW range.

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NOON



V-6 endurance,
throughout. Both of
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cations to keep
ve V-6 engines,
plus anything

Cut your job time! Profit from the superior performance of the exclusive 401 cubic-inch V-6 engine. Larger clutches. Bigger payloads with better weight distribution from 90" BBC. Extra-rugged cabs with double-wall construction... all the advanced features... uncompromising durability that have made this BW5500 Series the most popular GMC construction truck.

Highest performance of any standard gas-engine tilt-cab! This new GMC LW7000 Series is powered by the exclusive Twin-Six with 625-630 pounds-feet torque at 1400-2100 rpm, 275 hp. at just 2400 rpm. Easy-to-service, easy-to-drive and easy-to-own 72" BBC tilt-cab trucks meet all the construction hauling demands from 19,500 lbs. GVW to 76,800 lbs. GCW.

NIGHT



d gas-engine
powered by the
feet torque at
rpm. Easy-to-
2" BBC tilt-cab
demands from

Haul 120,000 lbs. GCW anywhere (or 64,000 lbs. GVW) with the biggest diesel-powered GMC Truck ever built—the DBW9000 Series. It's as massive and rugged as it looks. Choice of 11,000 or 15,000-lb. front axle, 48,000 or 50,000-lb. tandem. Standard equipment—14" solid dual disc-type clutch, 1106 sq. in. brake lining area, 5-speed overdrive and 4-speed auxiliary transmissions.

Superior V-6 performance, easier handling and smoother ride are yours with independent front suspension and coil rear springs . . . extra value and stamina in every one of 34 GMC pickup combinations, including versatile 4-wheel-drive models.

Over 3000 GMC Dealers have the trained personnel and parts stock for prompt, economical service.



Smoother, maximum power from every drop of fuel starts with equal fuel-air mixture to each cylinder. This is accomplished with short, individual intake manifold inlets.

Engine life is greatly extended with temperature variation held within 4 degrees throughout the entire system. Up to 176 gallons of coolant circulating every minute does away with concentrated, damaging "hot spots."

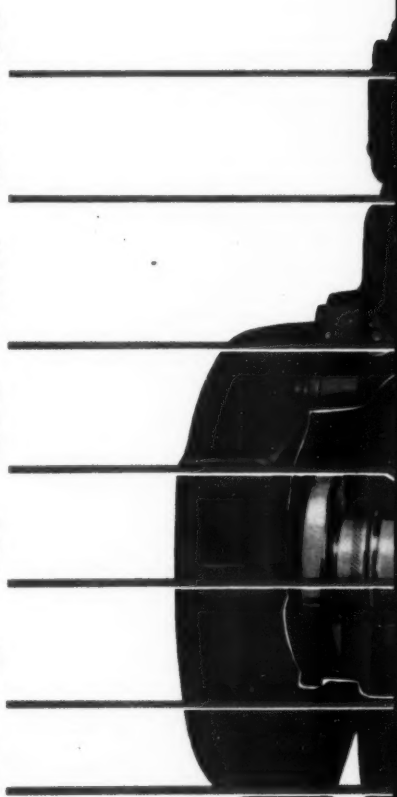
Bigger, longer-lasting valves. Both intake and exhaust valves are extra large and durable with big valve heads; thick, short, stiff stems; integral valve guides; positive rotators on most models . . . everything for better sealing, less wear, free breathing and cooler operation.

Better oil control and longer life are the benefits of GMC-built aluminum pistons with cast-in steel expansion control band and chrome-plated top ring. Leaks and uneven wear are minimized.

You get increased engine durability with shorter, huskier crankshafts that resist deflection. Generous journal overlap and up to 60% more bearing area increase engine life, too.

Rock-solid strength and rigidity are the natural results of the short block with 3-inch drop skirt and staggered cylinders. Deflection is practically eliminated.

Less friction and wear. Full-pressure lubrication system with up to 14 gallons of oil circulated per minute by high-capacity, rotary pump adds to engine life.



FOR ALL THE PROFIT-FACTS,

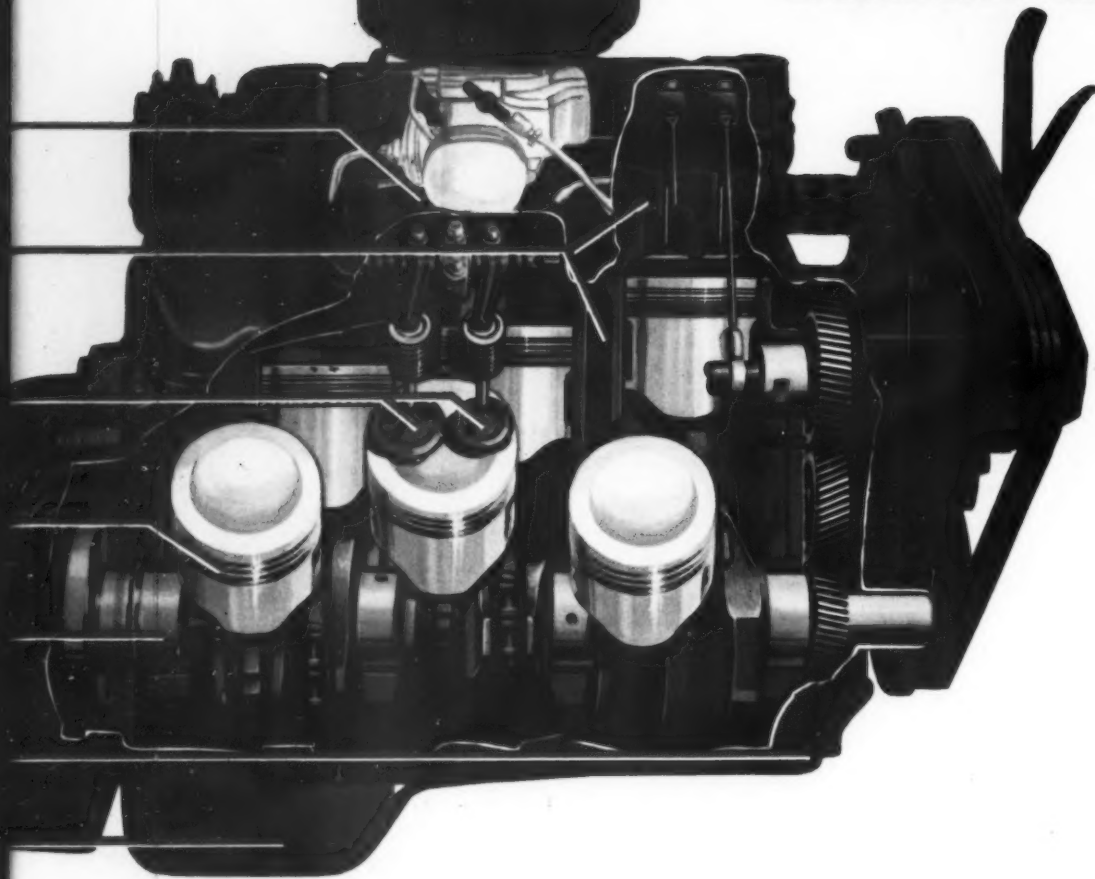


GMC cabs last and last on every construction job because they are built extra-strong and reinforced at all stress areas. See the double-wall design. Entire cab is phosphate coated to protect against damaging rust and corrosion.



Get shorter turns, longer life with new, stronger I-beam front axles, increased tread and wider spring centers. Surer stops and longer lining life with larger brakes.

EXCLUSIVE GMC V-6



FACTS, SEE YOUR GMC DEALER LISTED IN THE YELLOW PAGES

From tough, full-load starts to no-load highway speeds you have the final drive ratios to meet your needs exactly. It's easy with GMC's wide selection of rear axle, main and auxiliary transmission combinations.

GMC V-6 AND TWIN-SIX GAS ENGINES ARE BUILT TO OUT-LAST, OUT-PERFORM ALL PREVIOUS GASOLINE ENGINES!

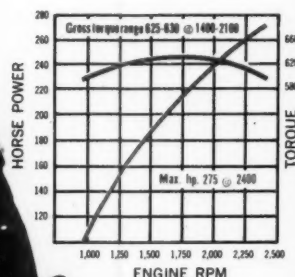


Here are the gas engines that are the talk of the trucking industry . . . with good reasons. Exclusive, extended-life GMC V-6s are built only for trucks, with full power output over a broad range at low engine speed to give you higher performance, stay on the job longer, cut fuel and maintenance costs.

EXCLUSIVE V-6 POWER FOR BONUS EARNINGS ON EVERY HAUL		
Model	Gross Torque Range	Max. Horsepower
305A	258-260 @ 1400-2200	150 @ 3600
305B	264-266 @ 1100-2000	150 @ 3600
305C	268-270 @ 1200-2100	165 @ 3800
351	308-312 @ 1400-2400	180 @ 3400
401	375-377 @ 1200-2000	210 @ 3400



This is the most powerful gas engine offered as standard equipment in trucks today . . . the exclusive Twin-Six by GMC. Look at the power curves below. Notice the high power at low rpm . . . the low-stress, easy-stroking engine speed that greatly extends engine life, saves fuel, reduces gear shifting up to 60%, permits you to maintain higher sustained road speeds on all terrain. Just one turn behind the wheel will prove the unsurpassed performance. See your GMC Dealer and give it a try today.

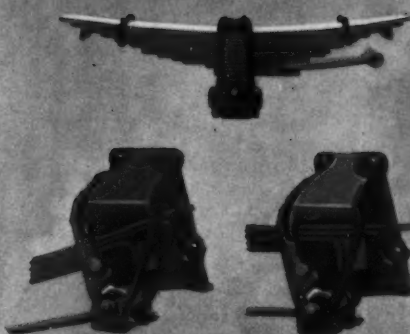


PAGES OR ANY OWNERS OF NEW GMC CONSTRUCTION TRUCK

load starts to speeds you ratios to exactly. It's wide selection and auxiliary inations.



Truck and cab life are increased with extra-rigid frames of completely new design and construction. Up to 35% stronger, too. They are built to carry the biggest loads under the most extreme applications.



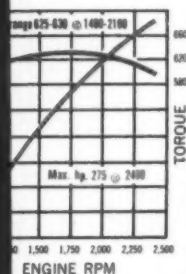
EMPTY

LOADED

Bigger the load, stiffer the springs . . . as they should be. This is how new GMC vari-rate rear springs work . . . automatically. Full 3 inches wide, yet they are up to 100 pounds lighter than springs of previous design. Notice the bottom leaf transmits all braking and torque forces to the frame.

LT

engine offered as today . . . the look at the power . . . the low . . . extends engine 0%, permits you all terrain. Just surpassed per- try today.



NEW V-6 DIESELS ARE SETTING NEW PERFORMANCE AND ECONOMY RECORDS FOR CONTRACTORS EVERYWHERE!

GMC Truck V-6 diesels are the proved, efficient 2-cycle power plants that produce load-moving power on every downstroke . . . smoother, faster acceleration. More power per dollar! More power per cubic-inch! More power per pound! Hundreds of pounds lighter and several inches shorter than comparable diesel engines.



PERFORMANCE-MATCH YOUR DIESEL POWER NEED		
Model	Max. Torque	Max. Horsepower
6V-71	577 @ 1200	189 @ 1800
		to 210 @ 2100
	604 @ 1200*	197 @ 1800*
		to 218 @ 2100*

*At sea level

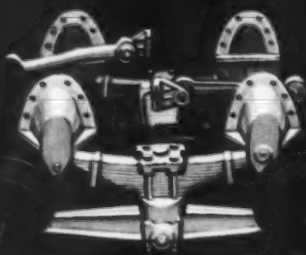
Smoother, faster acceleration GMC's two-cycle design delivers power on every downstroke of every piston . . . twice as often as in a four-cycle engine. There are no wasted strokes, no power lags.



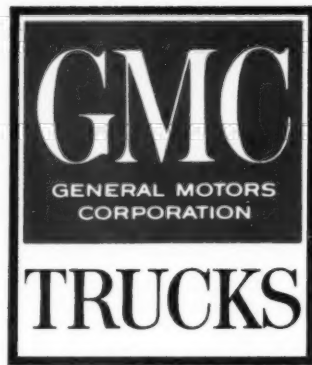
Save up to 5% on fuel, release up to 7% extra horsepower to the drive wheels automatically with this hydraulically-controlled fan. Standard equipment only on GMC diesel-powered trucks.

ON TRUCKS

igger the load, softer the springs . . . as they should be. This is how new GMC vari-rate rear springs work . . . automatically. Full 3 inches ride, yet they are up to 100 pounds lighter than springs of previous design. Notice the bottom leaf transmits all taking and torque forces to the frame.



More payload, less service is possible with these GMC tandems due to simplified, lightweight design. Greater stability with lower center of gravity. Longer axle and tire life with 50% load on each axle at all times. Four-point mountings eliminate concentrated frame stresses.



From 1/2-ton to 60-ton . . .
General Motors leads the way!
GMC Truck & Coach—a General Motors Division
Pontiac, Michigan

engineer and director of engineering and construction for the Aluminum Co. of Canada, Ltd., and he was responsible for the \$150 million Chute-des-Passes hydroelectric project in the Province of Quebec.

Four acquire Rutherford; form consulting service

Four construction men have acquired the assets of the Geo. A. Rutherford Co., general contracting firm of Cleveland, Ohio. They plan to expand the company's operations through formation of a new consulting service. Cleveland business and industrial firms and their architects and engineers will get assistance from the service in site studies, financing arrangements, and cost analysis.

President of the company, to be known as Geo. A. Rutherford, Inc., is Albert A. Hutton. The three other members of the group are long-time Rutherford employees: Arthur J. Coburn III, executive vice president and treasurer of the new firm; Edmond E. Johnson, vice president of construction; and Robert C. Preisel, assistant vice president.

Everett M. Clark and R. Neil Wells, former owners of the company, will be on the board of directors of the new firm.

Emerson elects three

The Sam W. Emerson Co., construction firm of Cleveland, Ohio, has elected three new officers.

Sam W. Emerson, founder of the firm and its president since 1912, has been elected chairman of the company's board. He will also continue as the firm's treasurer.

New president of the firm is Ralph E. Laubscher. He has been vice president in charge of construction since 1919. George T. Semple succeeds Laubscher as vice president.

E. Warren Bowden, new president of Walter Kidde Engineers Southwest.



Walter Kidde subsidiary has new president

E. Warren Bowden is the new president of Walter Kidde Engineers Southwest, Inc., Houston, Texas, a subsidiary of Walter Kidde Constructors, Inc., engineering and building firm of New York City and Houston. He replaces William Collins, president of the parent company, who previously also headed the subsidiary.

Some twelve years ago, Bowden established the firm's southwest operations in Houston, where he will again be headquartered. Bowden is also executive vice president and a director of the parent company.

AGC nominates officers

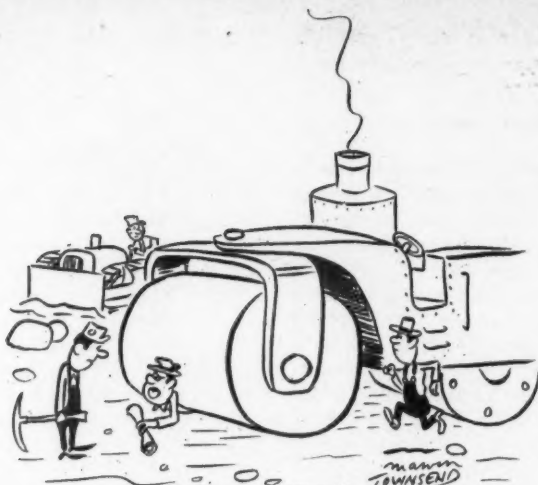
AGC officers for 1961 were nominated at the midyear meeting of the Governing and Advisory Board, held last month in Phoenix, Ariz.

Vice president M. Clare Miller was nominated for president; Frank F. Burrows, for vice president.

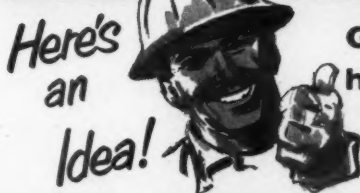
Miller, president of the San Ore Construction Co., Inc., McPherson, Kans., three times headed the Kansas Contractors Association, an AGC chapter.

Burrows, president of Williams & Burrows, Inc., Belmont, Calif., has long been a member of AGC's Governing Board and has served on its Executive Committee.

Officers will be elected by mail ballot in December and installed at the AGC convention in Boston, February 27-March 2.



"No, I'm not hurt. I just like to work under pressure!"



GAR-BRO
helped cut costs
in pouring
concrete piers!

One contractor cut the time in placing concrete on this bridge job by planning ahead. Here, on these two bridge piers, note that he used three complete units comprised of Gar-Bro Collection Hopper and a string of Steel Chutes plus a Gar-Bro Bucket. He used the hopper and chutes to direct the concrete into the forms and prevent segregation.

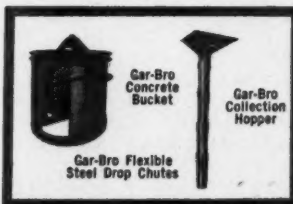
His object was to prevent any delays by using one hopper and chute unit to place concrete in one pier, while the second one was set in place in the other pier, and the third one (see it hanging in rack between piers) was being shortened. Delays of transit mixers and the crane were minimized by rotating the hopper and chute units and shortening the chute line to the new level of the concrete in each pier.

It's a good idea to team up your Gar-Bro Concrete Handling Equipment to save time and cut costs.

See your Gar-Bro dealer or write for Catalog and Concrete Handling Manual today!

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GAR-BRO

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**CONCRETE HANDLING
EQUIPMENT**



NEW fully-hydraulic TEALE "200" CRANE LIFTS MORE with LESS CRANE WEIGHT!

If you want MORE WEIGHT IN TRUCK PAYLOAD... less in crane (without capacity loss)... the tough, high-performance TEALE "200" fits your needs! Constructed of T-1 and COR-TEN steel wherever advantageous... weight is kept low, and performance high! With a STANDARD 16' BOOM (Crane weight—2300 lbs.)... the "200" lifts from 3,750 lbs. (at 8') to 2,500 lbs. (at 16')! It works in a full 360° circle... allows 66' of hydraulically controlled line take-up! It comes equipped with dual controls (a complete panel on each side of truck), and hydraulically extendable outriggers!

It is also available with an HYDRAULICALLY TELESCOPING BOOM (crane weight, 2,700 lbs.) that can be extended or retracted from 16' to 28' under full load! At full 28' extension, it still handles a full 1,200 lbs. with ease and safety! Vertical reach with this boom is 35 ft.!

TEALE "200" fits any truck with curb weight of 5,500 lbs. and up... mounts in just 17" of space behind the cab... is specially ideal for those with single axles!

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Teale
AND COMPANY
P.O. Box 308, Omaha, Neb.

TOP "CRANE" POWER plus FULL TRUCK PAYLOAD... It's a

TEALE CRANES available with capacities from 400 to 7000 lbs.

For more facts, use Request Card at page 18 and circle No. 274

SEPTEMBER, 1960

Avoid legal pitfalls

Statute on low bid does not always hold

THE PROBLEM: Under federal laws and regulations, could the Public Housing Administration adopt a rule that persons or firms debarred from contracting with other federal agencies be ineligible to receive an award by a city housing authority?

THE ANSWER: Yes. (Arthur Vanneri Co. v. Housing Authority of City of Paterson, 149 Atl. 2d 228, decided by the New Jersey Supreme Court.)

The plaintiff's bid for housing construction—\$4,647,000—was the lowest by \$36,000, but the housing authority awarded the contract to the next

lowest bidder on the ground that the plaintiff company was ineligible because it had been debarred from contracting with the Department of Defense. Upholding judgment in favor of the housing authority, the Supreme Court decided:

After advertising according to the bidding law, the low bidder for a municipal contract must be given a hearing on the question of his responsibility before the contract is awarded to a higher bidder.

In order for the lowest bid to be rejected, there must be evidence

showing such irresponsibility on the part of the low bidder as would cause fair-minded and reasonable men to believe it was not in the best interest of the municipality to award the contract to him.

The purpose of a statute requiring the award of a municipal contract to the lowest responsible bidder is to encourage competition, which in turn protects the public coffers and prevents chicanery and fraud in public office.

"Responsibility," within the meaning of this statute, may involve experience, financial ability, facilities necessary to perform the contract, and the moral integrity of the bidder.

The statutes authorizing the administrator of the General Services Administration to prescribe policies

and methods of procurement of property and nonpersonal services—including contracting—are advantageous to the government in terms of economy, efficiency, or service. They include authority to issue regulations authorizing federal agencies to declare ineligible for contract awards any firms or individuals debarred by other federal agencies.

Edited by A. L. H. STREET Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

Surveyor sued for error

THE PROBLEM: The defendant, a surveyor, was employed by the plaintiffs to survey land to determine its elevation and the quantity of dirt that could be removed in leveling it to an elevation of 1 foot above street grade. He erroneously informed the plaintiffs that 51,000 cubic feet could be removed when actually no dirt could be removed. Were the plaintiffs, in suing the defendant, entitled to collect the value of the excess dirt, which was misrepresented to be present, as the measure of their damage?

THE ANSWER: No. (Roberts v. Karr, 3 Cal. Rptr. 98, decided by the California District Court of Appeal, Fourth District.)

The court ruled that the surveyor was liable for his negligent misrepresentation, but only for \$300—what it costs the plaintiffs to have another and accurate survey made. The court disallowed the plaintiffs' claim for the profit, if any, that they might have made from the sale of the supposed surplus of dirt.

Contractor and town dispute contract

THE PROBLEM: A corporate contractor sued a town for a balance due under a sanitary-sewer construction contract. The amount due depended upon an interpretation of the contract. At the trial, each of the town officials who participated in the making of the contract testified as to how he understood its meaning. Was such testimony admissible?

THE ANSWER: No. (Town of Alamo v. Forcum-James Co., 327 S.W. 2d 47, decided by the Tennessee Supreme Court.)

The court noted that the question presented was what the contract was mutually intended to mean—not the separate understandings of the participants in its making.

The general nature of the dispute, decided in favor of the contractor, is indicated by the court's summary of the contentions:

The town insisted that the parties entered into a lump-sum contract and that, although the contractor furnished more than 10 or 12 times the 670 square yards of asphalt men-

(Continued on page 46)

All Teeth Stay Sharper, Last Longer with



ROAD RIPPER TEETH averaged 7 to 10 times more life after receiving protection with Tube Borium. Notice how tooth chisels down with wear.



SHOVEL TEETH wore out in one 8-hour shift. A few beads of Tube Borium applied during noon break prolong life 6 or 8 full shifts. They are then repointed and hard-faced for further use.

TUBE BORIUM is available in stick form for oxy-acetylene or manual electric application. Also in continuous wires for automatic and semi-automatic electric application. Various mesh sizes for individual uses.

STOODY COMPANY

11904 East Slouson Avenue
Whittier, California

For more facts, use Request Card at page 18 and circle No. 276

Stoody TUBE BORIUM!

Wear and loss of digging efficiency are common complaints on all types of teeth—ditchers, power shovels, rippers, draglines, dredges, etc. Hard-facing greatly prolongs useful life. But even so, each tooth can be made to last far longer than ever before and retain its sharpness by hard-facing with Stoody TUBE BORIUM!

Why is this one hard-facing alloy so superior on teeth? No other hard metal equals TUBE BORIUM in straight abrasion resistance. Its deposits are thickly peppered with tiny tungsten carbide particles. Wear is virtually defied by this hardest-of all man-made metals.

More expensive in first cost, Tube Borium shows excellent economy in overall service life, outlasting other materials many times over. And longevity is not your only benefit. Remember, one major cost of any hard-facing application is welding time. Use the best, Tube Borium, and you'll save several applications of less effective alloys besides eliminating needless downtime!

Your Stoody dealer (check the Yellow Pages of your phone book) will supply details, literature or recommendations. Ask about Tube Borium—or write direct.



DRAW LINE TEETH used in slag dump were hard-faced with Electric Tube Borium—outlasted unprotected teeth 9 to 12 times.



DITCHER TEETH—A few ounces of 90-40 Electric Tube Borium on points of teeth increased life 6 to 8 times over factory originals.

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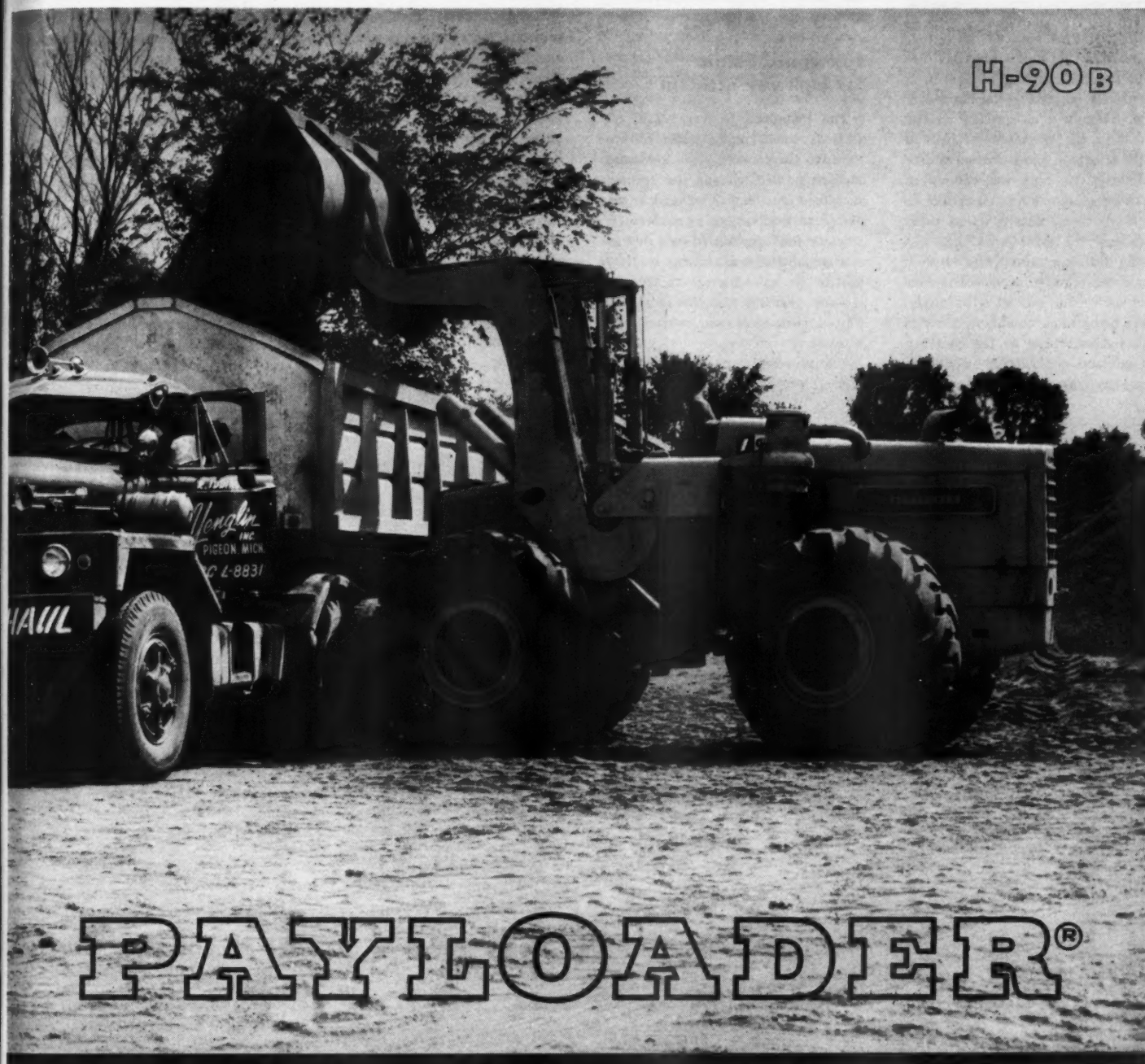
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ENGINEERS



HIGHEST DUMPING CLEARANCE

The Model H-90B has proved by performance that it is tops in its class. One of its most obvious advantages is its high dumping clearance—almost a foot more than the average of all competitive models.

Power is also outstanding — 24 hp more than the average of all competitive diesel models.

Stability is unmatched because of long wheel base, wider wheel tread, and better weight distribution.

Operator Safety is assured with underslung boom

arm design, fullest visibility and fixed ladder.

Ease of Control is provided by easy operating 4-wheel air brakes, dual cylinder power-steer, single lever "no-stop" power shifting to all gear ratios. "Operator's Choice" dual brake pedals — another "PAYLOADER" first — gives the operator a choice of braking with or without transmission engaged.

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Send full data on H-90B and many Attachments

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NOVEMBER, 1960

avoid legal pitfalls

(Continued from page 44)

tioned in its bid and a similarly disproportionate quantity of gravel, it was merely entitled to the lump-sum price. The town also relied on the fact that the contractor failed to notify it of the claim for extra pay until after the work was completed.

The contractor admitted failing to notify the town that it would claim extra pay for extra work, but was upheld in its contention that no such notice was required because the contract called for pay at unit prices, notice being required only as to extra work not embraced by the contract. The contract provision for 670 yards of asphalt was a mere estimate be-

cause of the town's reservation of the right to make changes in the work as the job progressed.

Suit against state for highway accident

THE PROBLEM: In New York, the state is conditionally liable for injuries to travelers on state highways. Motorists filed claims for injuries sustained on a highway that was under reconstruction but open to travel. The accident was caused by a depression across the road varying in depth to 8 inches, allegedly due to the contractor's neglect. On the facts presented, were the claims properly dismissed?

THE ANSWER: Yes. (*Seide v. State of New York*, 196 N.Y. Supp 2d 829,

decided by the New York Court of Claims.)

The Court of Claims said that a previous judgment in a suit by the claimants exonerated the contractor from liability on the ground that the accident was due to claimants' careless driving, and that this was conclusive against their right to make any claim against the state.

The Court of Claims also said that the state has an undelegable governmental duty to maintain its highways in reasonably safe condition, and while it could require a highway under reconstruction to be kept open for traffic and require the construction contractor to protect highway users from dangers, it could not thereby shed its responsibility. For a failure on the part of the contractor,

the state could be held liable if failure to perform its duty of inspection, supervision, and correction of conditions was a proximate cause of injuries to others. But where contractor is the active agent of the danger, the state would not be jointly liable with him.

Contractor not liable for poor soil conditions

THE PROBLEM: A building erected on leased land after the owner had had a retaining wall and fill constructed at the site. Experienced engineers had told the owner that conditions were such that they should be tested before the wall was designed. Disregarding the advice, the owner engaged another engineer to prepare plans and specifications. He knew what the first engineers had advised, he prepared the plans and specifications without any soil test. The owner accepted the documents, and they were approved by the building department. The owner had the wall built by a contractor who sublet structural steelwork. When the wall and fill had been completed and accepted, the owner turned the site over to the lessee, who began work on the building. As work progressed, cracks in the building and the adjacent ground occurred due to subsidence cracking of the retaining wall and subsidence of the soil. Were the owner's contractor and subcontractor liable for the damage?

THE ANSWER: No. (*Stoneman v. Wick Construction Co.*, 349 Pac. 2d 215, decided by the Washington Supreme Court.)

The court said that, even if there were defective welds in the fabricated steel construction in the retaining wall, this did not cause the subsidence. It was proved that the defective soil conditions would have caused the subsidence even if the welds had not been defective.

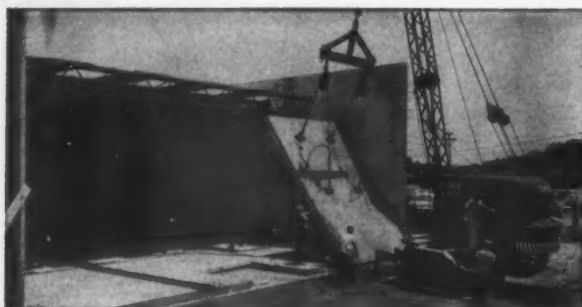
Trespassing child killed by unattended machinery

THE PROBLEM: If a contractor leaves machinery where it might attract trespassing children and fails to take it to prevent its being set in motion, and a child is injured as a result, can the contractor's liability in damages turn upon the child's age and awareness of the danger to which he exposed himself?

THE ANSWER: Yes. (*Dean v. Wilson Construction Co.*, III S.E. 2d 827, decided by the North Carolina Supreme Court.)

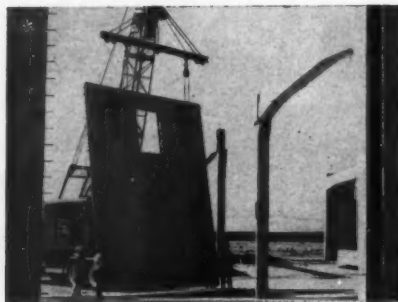
The decision is another reminder found in many appellate court opinions that it is less expensive to leave unattended machinery locked than to defend a damage suit, even if the defense is successful. In this case, the defendant was exonerated because the boy killed was 14 years old and intelligent. If he had been younger, damages might have been awarded.

A crane used in reconstructing a street was left in a blocked-off area.

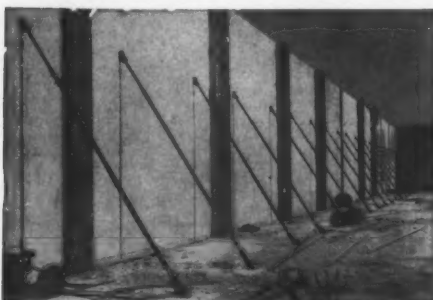


WAREHOUSE

DANIEL CONSTRUCTION CO. PHOTO



SUPERIOR Stress Equalizers, Pick-Up Inserts, and Lifting Angles were used on this panel.



ADJUSTABLE BRACES used for quick and easy alignment of panels

SUPERIOR

Has the Accessories AND the System for TILT-UPS...

FROM ORIGINAL LAYOUTS TO FINAL POSITIONING

In addition to tilt-up accessories which have been used and proven on thousands of conventional as well as unusual projects in this field, SUPERIOR also provides the system for the entire job, from original planning and layouts, to the final positioning of the precast panels.

As the pioneer in this field, SUPERIOR has recently developed a special Stress Equalizer for reducing lifting stress in tilt-up panels of over 20 ft. high. It offers two advantages: (1) Less concrete reinforcing steel is required for stresses which occur at time of lift; (2) Permits use of simplified crane rigging.

On your next tilt-up job, avoid expensive crane delays, be assured of safety, and reduce overall costs! Specify the SUPERIOR System.

For details request a copy of Bulletin TU-4

SUPERIOR

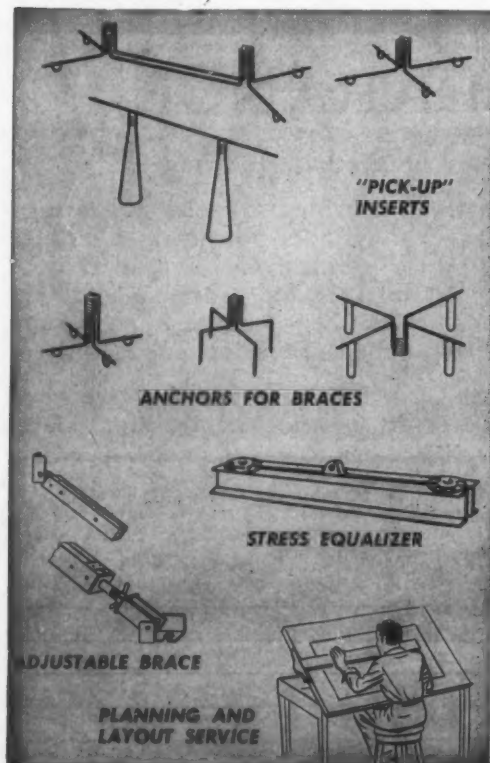
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CONTRACTORS AND ENGINEERS

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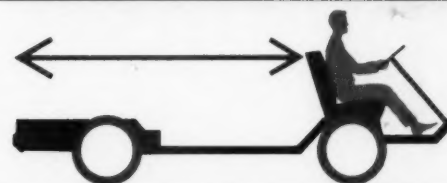
NEW FROM CHEVROLET

!!! WING-DING OF A TRUCK IDEA !!!



DRIVER'S UP FRONT

★★★★★★★★★★★★★★★★★★★★
!! ENGINE'S IN THE REAR !!



ALL THE REST IS LOAD SPACE

What you see here is not merely a new truck model . . . *it's a new kind of truck.* An efficient truck design that gives you many more feet of load space than a conventional half-tonner because of a unique build that eliminates the hood. A design that puts out new working efficiency by putting the engine and transmission in the rear. (Of a Corvair 95's short 15-foot length, *nearly 9 feet is for cargo!*) Here's a truck weight that's distributed *evenly*, front and rear, to enable a Corvair 95 to carry up to 1,900 lbs. of payload with a trim 4,600-lb. GVW. Here's a short 95-inch wheelbase that pays off in easy, nimble maneuvering.

Dollar-saving performance starts with the engine—an air-cooled space-saving “pancake” 6 that never needs antifreeze or radiator repairs . . . and never stops whittling down fuel costs! Ideally suited for trouble-free truck duty, also, is the tough chassis build of Corvair 95, which includes frame and body designed as a rugged one-piece unit to withstand slam-bang runs. And there's *4-wheel independent suspension* (first time in a U.S. truck!) to add stability to truck performance and to take the roughness out of road surfaces.

The list of Corvair 95 design advantages is as long as your arm. There's *low* loading height, for example: load space so accessible that the truck practically loads and unloads itself! And there's exceptional driver comfort in the roomy cab. (With no hood projecting out in front, visibility has never been better.)

It's a wing-ding of a truck idea—a big Chevy “first,” available in pickup and panel body versions. Look 'em over right here.

★ NEW LOADSIDE PICKUP

More load space than conventional half-tonners! • Full-width pickup box gives 80 cubic feet of load space!

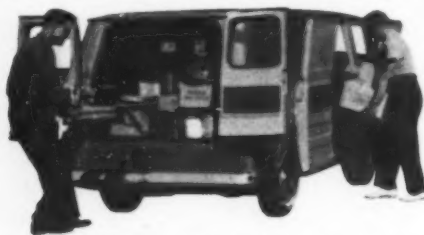
• Big 1,900-lb. cargoes, with trim 4,600-lb. GVW • Deep-well cargo area midship for tall, bulky loads • Low 14" floor height saves work when loading • Optional (extra cost) flat floor gives 39 sq. ft. of flat loading area, plus cargo-stowing area underneath! • Sturdy integral body-frame design • Independent 4-wheel suspension • Short wheelbase and turning radius for easy handling and parking



NEW CORVAIR 95 LOADSIDE

★ NEW CORVAN

Worlds of load space—109" long, 60" wide and 54" high at center! • High 1,800-lb. payload capacity! • Big double doors that open so wide you can load a 4' x 4' crate with ease (right-side doors standard, left-side doors optional at extra cost). • Wide-opening double rear doors! • Easiest loading—low 14" loading height . . . door stops that hold doors open at 100- and 180-degree angles • High interior height for convenient cargo handling • Snappy styling—high, wide side panels that allow plenty of space for your advertising.



NEW CORVAN

★ NEW RAMPSIDE PICKUP

No-lift loading—exclusive Corvair 95 Rampsideside pickup feature! • Wide, ruggedly built side gate drops down to form a convenient ramp for easy, no-lift loading! • When closed, ramp fits flush with body side; and it's safety-latched to stay tight and rattle-free • 80 cubic feet of load space in big pickup box! • Flat floor, optional at extra cost, gives 39 sq. ft. of flat loading area • Low loading height! • Comfortable cab!



NEW CORVAIR 95 RAMPSIDE

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at the end of a workday. The boom extended in front of the un-
loaded crane cab, and the boy was
able to enter by merely sliding a door.
By working the levers, he brought
the boom into contact with an over-
head electrical power line and was
electrocuted. His mother and another
woman had warned him that it was
dangerous to play about the contrac-
tor's equipment.

In approving the decision of the
trial judge in dismissing a damage
suit, the Supreme Court summarized
the general attitude of appellate
courts concerning liability for in-
jury to trespassing children, under
the "attractive nuisance" rules of law.

The court said that this doctrine
applies only to children who are too
young to understand and appreciate

danger, and excludes those who are
old enough to understand the risk,
even though the owner has notice
that children are accustomed to
come about the place of danger. Al-
though there is no fixed age at which
a child ceases to be protected by this
doctrine, the majority of cases in
which it has been used have involved
children less than ten years old. It is
not usually applied to a child 14
years old or over, unless a lack of
normal mental development is in-
dicated, or the circumstances are
exceptional.

The court gave evidence that the
victim in this case was as developed
mentally and as capable of aware-
ness of the dangers to which he ex-
posed himself as any normal boy of
his age.

Status of state highways in municipalities

THE PROBLEM: Is it lawful for a
city to assess owners of abutting
property for the cost of public side-
walks on a state highway within the
city limits?

THE ANSWER: Yes. (*Toomer v. City
of Lake Charles*, 118 So. 2d 181, de-
cided by the Louisiana Court of Ap-
peal, First Circuit.)

The court ruled that a law requir-
ing the State Board of Highways to
keep in operating condition at its ex-
pense all municipal roads or streets
that are part of state highways did
not prohibit municipalities from
building new improvements for, or
extensions of, municipal roads within
the state highway system, and that it

did not limit the power of municipali-
ties to lay sidewalks along streets in-
corporated in the system and to assess
owners of abutting land their share
of the cost of the improvements.

Consent by the state highway
agency to concurrent use of land by
a municipality for sidewalks does not
cause the municipality to become an
agent of the highway commission.
And it does not preclude assessment
of owners of abutting property on
any theory that the municipality, as
agent, cannot exercise greater powers
than those available to the state,
which has no statutory powers to
assess costs of highway improvements
against abutting property owners.

Changes must be made by authority contract names

THE PROBLEM: A Kentucky county
fiscal court (county board) awarded
a road construction contract based
on plans and specs prepared by the
county engineer, which were specifi-
cally made a part of the contract.
The contract also required the work
to be done to the satisfaction of the
county engineer. Under the contract,
the fiscal court had a right to change
the quantity of work to be done at
unit prices. The engineer later
changed the plans and specs, without
authority from the fiscal court, in-
creasing the quantity of work to be
done. The contractor made the
changes without contacting the fiscal
court. Was he entitled to collect for
the extra work?

THE ANSWER: No. (*Trietz v. Van
Arsdale*, 331 S.W. 2d 734, decided by
the Kentucky Court of Appeals.)

Ball game injures man on employer-sponsored team

THE PROBLEM: If an employer spon-
sors a ball team composed of his
employees, and one of them is in-
jured—for example, dislocates his
shoulder in throwing a ball from
third to first base—and thereby be-
comes partly disabled, is the em-
ployer liable for payment of work-
men's compensation, the same as if
the injury had been sustained in the
course of the man's regular work?

THE ANSWER: Yes. (*Hendren v. In-
dustrial Commission*, 166 N.E. 2d 76,
decided by the Illinois Supreme
Court.)

Architect's right to fee challenged by owner

THE PROBLEM: An architect filed a
lien claim against property for his
fees in drawing plans and specifica-
tions for a building. In a suit by the
owner to cancel the lien, was the
architect bound to prove that he was
a registered architect when he was
employed and when the services were
rendered?

THE ANSWER: Yes. (*Mabry v.
Priester*, 333 S.W. 2d 684, decided
by the Texas Court of Civil Appeals,
Houston.)

It did not matter that the services
were efficiently performed. The bur-
den was not on the owner to prove
that the architect was not licensed.

NEW!!!! CHEVROLET CORVAIR 95 TRUCKS

They're the *newest* load-pullers since horses went out of style! The most efficiently
designed trucks you've ever seen, loaded with scores of new advantages, such as these:

ECONOMY OF AN AIR-COOLED REAR ENGINE—the
aluminum Turbo-Air 6. No antifreeze to buy; no
radiator repairs to worry about. Fast warm-up
keeps fuel costs down. And when you need a burst
of speed, this one really skedaddles!

EASY TRACTION WHEN RUNNING EMPTY. Snowy or
mud-clogged routes pose no problem for Corvair
95. This new design puts engine weight in the rear,
for deep-biting traction that gets you through.

UNPACK FOR FAST, EASY SERVICING. Engine, trans-
mission and rear axle are combined in one strong,
efficient unit. A space-saving package that can
be removed in minutes to speed up service, reduce
downtime. Convenient access panels make rou-
tine maintenance easier.

MORE LOAD SPACE, LESS ROAD SPACE. With nearly
2 feet less overall length, a Corvair 95 eases into
tight spots like no conventional half-tonner can.
But Corvair 95's carry bigger cargoes—nearly two-
thirds of the length is for load space!

RUGGED UNITIZED BODY-FRAME CONSTRUCTION.
Tough, integral floor-frame assembly reduces truck
weight, helps provide low loading height. Welded
all-steel front, side and roof panels add more
strength. Corvair 95's are built to last!

LESS TRUCK WEIGHT ALLOWS MORE CARGO WEIGHT.
Corvair 95's weigh up to 1,200 lbs. less than cor-
responding conventional models. Yet they'll carry
1,900 lbs. of cargo!

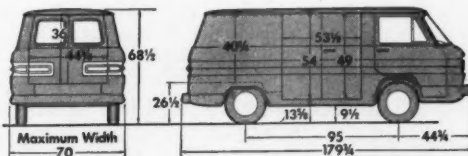
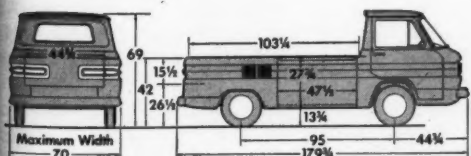
BALANCED 50-50 WEIGHT DISTRIBUTION. Load space
located midship results in big cargo-carrying
capacity. Husky 2,500-lb.-capacity front and rear
suspensions carry nearly equal loads to reduce
strain on chassis and tires.

SMOOTH INDEPENDENT 4-WHEEL SUSPENSION.
Smooth sailing on bumpy streets results from
balanced friction-free coil springs at all four wheels.
Independent wheel action adds to handling ease.
A sturdy suspension that withstands any duty!

SHORT WHEELBASE MANEUVERABILITY. Corvair 95's
are easiest to get around in. Turning radius (under
20 feet) is less than that of ordinary trucks. That
means easier maneuvering and parking, faster
hauls in congested areas.

EASIEST TO LOAD. Exclusive Rampside pickup side
gate drops down to make cargo loading a snap.
Big Corvan side doors open so wide you can load
4' x 4' crates with ease. And Corvair 95 rear
loading heights, low as those of conventional
models, will save you work every time out.

And that's not the whole story, by any means.
There's rugged *truck-built* construction that shows
up best when the going's worst . . . snappy styling
with high, wide side panels that allow plenty of
space for advertising . . . and much, much more.
Visit your nearby Chevrolet dealer soon and get
all the details. . . . Chevrolet Division of General
Motors, Detroit 2, Michigan.



1961 CHEVROLET STURDI-BILT TRUCKS



For more facts, use Request Card at page 18 and circle No. 279

Position sloping floors with lift-slab method

Multilevel parking garage, with space for 500 cars, has slabs with folded beams and warped surfaces

Lift slabs measuring 170 x 190 feet are cast at the third-floor level for the upper floors of Prudential Insurance Co.'s 500-car parking facility, Newark, N. J. Workmen are placing reinforcing and Mervoids, made by Mercer Paper Tube Co., Trenton, N. J., for the folded beams that run between columns.

Contractors and Engineers staff article

Two "organists," playing a hydraulic duet on a construction job in Newark, N. J., raised themselves and 190-foot-long slabs of concrete 40 feet into the air. The slabs, eleven in all and weighing up to about 270 tons apiece, form the roof and upper floors of the Prudential Insurance Co.'s 500-car public garage.

Lift-slab method

The "organists," who operated a pair of electrically powered consoles with a keyboard of gages and control valves, rode atop the slabs. Each man actuated eleven hydraulic jacks to raise the slabs into position.

This was the first time the lift-slab method was used to raise slabs with folded beams and a sloping, warped surface. Each floor has an area of 170 x 190 feet and is divided into three sections supported by the four column lines.

The general contractor, Frank Briscoe Co., Newark, formed and cast the first three floors in place, then placed concrete for the lift slabs at the third-floor level.

After concrete had been cast in the plywood forms at the third-floor level for the first 6-inch slabs, a curing coat of Techkote 400 YS was sprayed onto the surfaces. Before the next lift slab was cast directly on the first, two more applications of Techkote were made to prevent any bonding of the slabs. Only top forms were required to shape the 30-inch-deep folded plate ribs that are spaced on 15-foot centers between the building columns.

For lateral stability, the center-section slabs were raised first; then slabs in the south and north bays were raised, in that order. The seventh-level slab—actually the roof—went into place first, and the sixth-floor slab followed. The fourth and fifth-floor slabs were raised together, with the fourth-floor slab being dropped off at the proper elevation.

Slabs were connected to the columns by field-welding steel shear heads, that had been cast into the slabs, to the column flanges. Knee-bracing between the columns and the embedded steel plates formed the bottom, upward-curving soffits at the ribs at each column location.

Jacks used

The lifting operation, handled by the Lift-Slab Corp. of New York, called for 22 jacks—eleven on each side of a slab being raised—set atop the wide-flange steel columns. Each



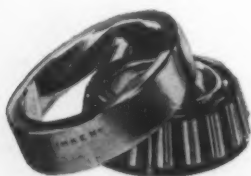
It's new, weighs 25 tons and Timken® bearings make it portable

EARTHMOVERS really take a second look when they see this new Kolman Mfg. Co. Model 303 60" belt loader at work. It weighs a big 25 tons, yet it's portable. It can convey one cu. yd. per sec.; has belt speed of 375 fpm.; handles 1,000-lb. boulders as easily as gravel. And Timken® tapered roller bearings not only roll the tremendous loads on belt idlers, they also carry the entire weight of the machine. Timken bearings are used in the Hewitt-Robins troughing idlers; in pillow blocks on the head pulley shaft and secondary countershaft; and in the tandem axle undercarriage. Cost-conscious con-

struction equipment builders and users want Timken bearings because they: 1) *Minimize maintenance, roll the loads.* The taper of Timken bearings enables them to take any combination of radial and thrust loads. Full line contact between rollers and races gives them extra load-carrying capacity, longer bearing life. 2) *Assure you more for your money.* You get service from graduate engineer salesmen that you can't get anywhere else; service from bearings that are better because of the Timken Company's unequalled research and testing facilities; quality in bearings that's better because we start with the in-

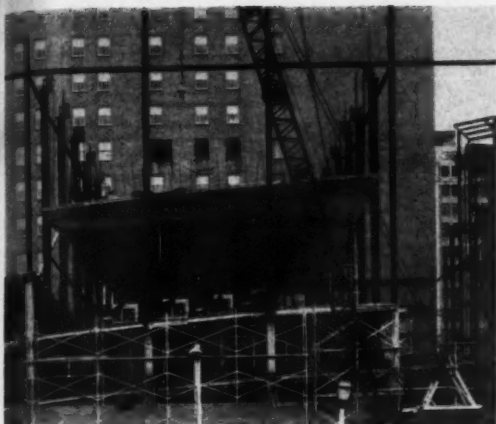
dustry's finest bearing-quality alloy steel available.

For assurance of better machines, be sure they're equipped with Timken tapered roller bearings. *When you buy Timken bearings you get...* 1) *Quality you can take for granted.* 2) *Service you can't get anywhere else.* 3) *The best-known name in bearings.* 4) *Pace setter in lower bearing costs.* The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO". *Makers of Tapered Roller Bearings, Fine Alloy Steel and Removable Rock Bits.* Canadian Division: Canadian Timken, St. Thomas, Ontario.

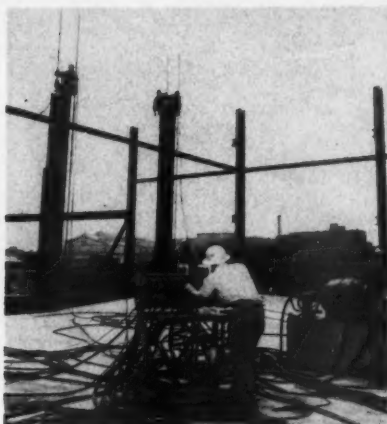


Industry rolls on
TIMKEN®
tapered roller bearings

For more facts, use Request Card at page 18 and circle No. 280



The roof section for the center bay is the first to be raised. This provides additional lateral stability to the end bays. Guy wires at each column provide temporary support. The lifting job was handled by Lift-Slab Corp. of New York.



An operator activates half of the 22 jacks from this console—one of two used to lift this 270-ton concrete slab into place for the roof of the new parking facility.



Looking like spaghetti scattered over the center slab for the roof, hydraulic lines from pumps and consoles run to jacks that handle the lifting job from positions atop the columns. Note the broom finish on the concrete.

jack was connected to the slab being raised by two 1 3/4-inch-diameter rods. These were fastened to the slab by exposed steel sockets embedded in the slab's sides.

The top 26 feet of each rod was threaded and attached to the top head of the jacking setup. There were two heads at each jack—one below and one above the jack.

Each head was passed over the two lifting rods. This connection was made by a pair of 2-piece hinged nuts that were locked into place around the rod by keyed sprockets. These sprockets were turned by a simple chain drive powered by a hydraulic pump. Since the same sprocket and chain-drive setup existed for each head, a second pump was required.

During the slab raising, the top head rose, causing the rods to rise. This, in turn, raised the slab. During the rise, the chain drive caused the nuts of the bottom head to travel in the opposite, or downward, direction. After the slab was raised about 3 inches, the jacking was stopped and the operation was reversed, so that the jack ram retracted. As this happened, the chain drive made the top-head nuts travel downward, with the ram, lowering the top head.

During this operation, the bottom-head chain drive did not operate. In this way, the position of the bottom head and the position of the rods and slab were maintained. The operation was repeated for another 3-inch lift of the slab.

THE END

Airco appointments

■ New assistant district manager in Philadelphia for Air Reduction Sales Co., division of Air Reduction Co., Inc., New York City, is C. J. Langley. He will aid district manager N. F. Moody in the sale and distribution of all Airco products marketed in the Philadelphia district.

Langley has served the company in various capacities since 1946. He was most recently assistant manager of sales in the Boston district.

Roger W. Tuthill has been named manager of engineering for the company's special-products department. He was previously assistant manager of the equipment engineering and development department.



Opens 2 miles of trench per day

widening blacktop highway in Southern Illinois

That's profitable trenching!

But it's routine for Rockford Blacktop Construction Company, a veteran of many years on this type of work. On the job pictured, Parsons 150 Trenchliner had to chew through edge of existing blacktop roadway (to assure close bond with new strip of blacktop) . . . yet the 150 averaged more than 10,000 feet of trench per day.

To help set this pace, the 150 was equipped with optional crawler sprocket for faster lineal travel. The point worth noting is the ability of the 150 to take this high-speed operation in stride. It gives you added proof of the perfect balance and ruggedness of this machine for handling any trenching job that comes your way.

Up to 25 ft./min., 5 3/4 feet deep

With standard drive, the 150 opens from 12 inches to 25 lineal feet of trench per minute—16 to 26 inches wide, at any depth to 5 3/4 feet. Hydraulic ram raises or lowers digging wheel to give you fractional-inch control of trench-depth. Another hydraulic ram tilts the mast for travel clearance and for convenient trailer loading. Cast steel buckets have self-sharpening, reversible, tap-in teeth. We'd like you to know more about this heavy-duty trencher. See your Parsons distributor for complete details.



Mile-a-week pace on 5-foot-wide aqueduct

Equipped with dual ladder-type digging booms, this big Parsons 310 averaged 1120 to 1200 lineal feet of 60" trench per day . . . maintained same pace with sidecutters added to trench 66"-wide sections. The complete Parsons line gives you trench widths from 8 to 72 inches, depths to 19 feet . . . in wheel and ladder-type Trenchliners, also tractor-mountable backhoes.

PARSONS COMPANY
Newton, Iowa

For more facts, use Request Card at page 18 and circle No. 281

A Division of
KOEHRING
Company



Headquarters offices of Chell & Anderson, Inc., Chicago, are joined to the 5,000-square-foot warehouse, right, by the roof continuation that forms a breezeway.



John S. Chell, chairman of the board of directors and father of the present president, is one of the founders of the Chicago Construction firm.



Glenn J. Chell, head of Chell & Anderson, Inc., believes in working together with the architect, but in keeping the building and designing separate.



Clarence J. Anderson, secretary-treasurer of the firm, takes a phone call at the centrally located reference desk and file rack in the office building.

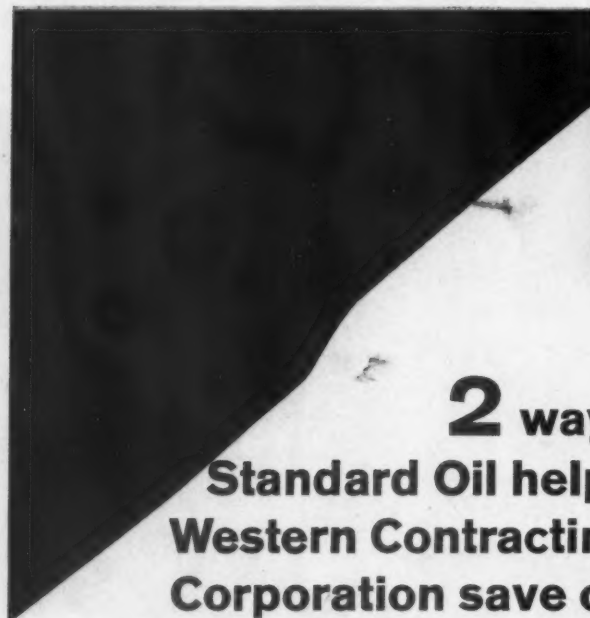
A contractor's headquarters, beautiful and well built, is

A functional adv

Contractors and Engineers staff article

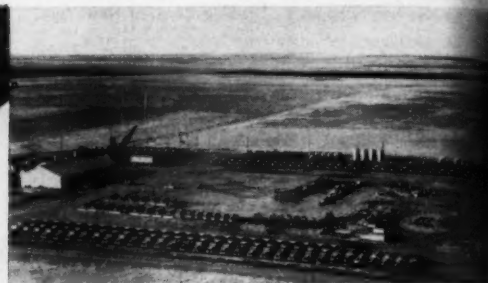
A belief of Chell & Anderson, Inc., is that a contractor's home office should represent his best building efforts.

Impressive evidence of this belief is demonstrated in its headquarters



2 ways Standard Oil helps Western Contracting Corporation save on Oahe Dam job

In eight years on project, 10 million gallons of diesel fuel and gasoline have been delivered on time and when needed



Multi-million dollar picture. Here is part of Western's equipment lined up for inspection at Oahe Dam. Photo shows 8 trucks, 23 bulldozers and crawler pieces and 9 scrapers.

Saving No. 1 F. L. "Red" Napple, Standard Oil staff engineer, and Standard Oil agent Bob Friman have been serving Western on the Oahe Dam project since the first dirt was moved in 1952. This means continuity of service that can be invaluable to a contractor. Red Napple has an engineering degree plus more than 13 years' experience in just this kind of work. Western thus has the equivalent of another engineer helping them. Napple is located at Aberdeen and Friman at Pierre, both only a few miles from the job. Western works around the clock. So does Standard. Bob Friman and his men make deliveries 24 hours a day, winter and summer. Western never has equipment down while waiting for deliveries of fuels, lubricants or greases.

Saving No. 2 Western uses only quality products—Standard's Diesel Fuel, STANDARD RED CROWN

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Advertisement for midwestern firm

buildings in the northern outskirts of Chicago. In addition to being functional, the buildings are a show piece for progressive architecture and quality construction. Set down in the midst of a drab industrial neighborhood, the lannon-stone and glass-walled buildings are bright and

beautiful. They suggest: "Here's a contractor who builds with distinction."

This is one practical reason why Chell & Anderson thought it important to spend extra time and money to build its headquarters. Prospective customers can see for themselves the

quality of the work done. They do not need to be sold on this fact.

The headquarters also have other advantages. Employees work with greater efficiency in the conveniently laid out, air-conditioned offices. The beauty of the surroundings gives them an additional sense of pride in

their work. The warehouse and storage area, which adjoins the offices, affords better control and maintenance of equipment.

The distinctive offices provide ample room for the seven men (including company officers) and three girls who work there. This is not a big-volume company. Chell & Anderson handles between \$6 million and \$7 million worth of work each year—primarily in schools and commercial buildings.

This is a family company, founded in 1914 by two hard-working carpenters—John S. Chell and Peter F. Anderson. Not too long off the boat from Sweden, they built the company with two saws, hard work, and a prayer. Since that time, it has grown steadily to become one of the better known contractors in the Midwest.

One of the original founders, John S. Chell, is still active as chairman of the board of directors. His son, Glenn J. Chell, is now president. Clarence J. Anderson is secretary-treasurer.

For 35 years, the company maintained its offices in downtown Chicago. Then, in 1954, it decided to move to the outskirts of the city, where the firm would be able to locate its offices and storage area on the same site. Employees would not have to fight city traffic.

For a building site, the firm chose a lot with a 200-foot front and a 125-foot depth. It was located in the 5400 block on N. Kedzie Avenue. The Chicago architectural firm, Perkins & Will, was selected to design the model headquarters. Chell & Anderson, of course, was going to build it.

Some 11 months later, after the interior decorators had put on the finishing touches, contractor and architect could congratulate each other. They weren't the only ones to offer congratulations. The Chicago Chapter of the American Institute of Architects, in conjunction with the Chicago Association of Commerce and Industry, presented the company and the architect with the annual award for quality construction and best design.

The \$200,000 headquarters are composed of three 1-story buildings enclosing a central parking area. Fitting one of the front corners of the lot is the 4,000-square-foot L-shaped office building. Its roof continues over a central driveway to join a 5,000-square-foot brick-walled warehouse. Across the entire back of the asphalt-surfaced lot is a 30-foot-deep covered storage area, open at the front. It is used to store forms and materials, and as a garage for cars of company officials. The patio adjoining the re-

(Continued on page 55)

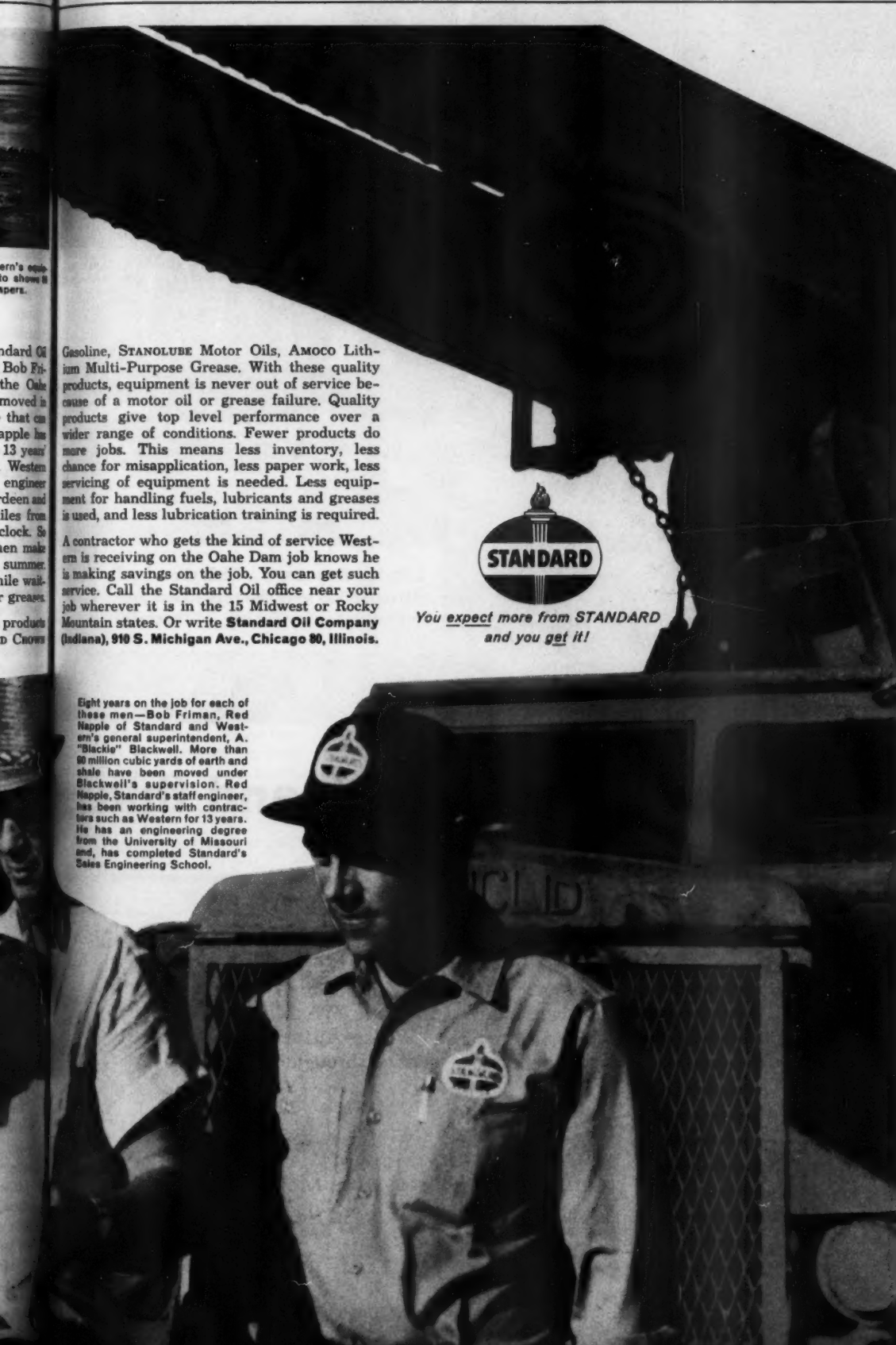
Gasoline, STANOLUBE Motor Oils, AMOCO Lithium Multi-Purpose Grease. With these quality products, equipment is never out of service because of a motor oil or grease failure. Quality products give top level performance over a wider range of conditions. Fewer products do more jobs. This means less inventory, less chance for misapplication, less paper work, less servicing of equipment is needed. Less equipment for handling fuels, lubricants and greases is used, and less lubrication training is required.

A contractor who gets the kind of service Western is receiving on the Oahe Dam job knows he is making savings on the job. You can get such service. Call the Standard Oil office near your job wherever it is in the 15 Midwest or Rocky Mountain states. Or write Standard Oil Company (Indiana), 910 S. Michigan Ave., Chicago 80, Illinois.

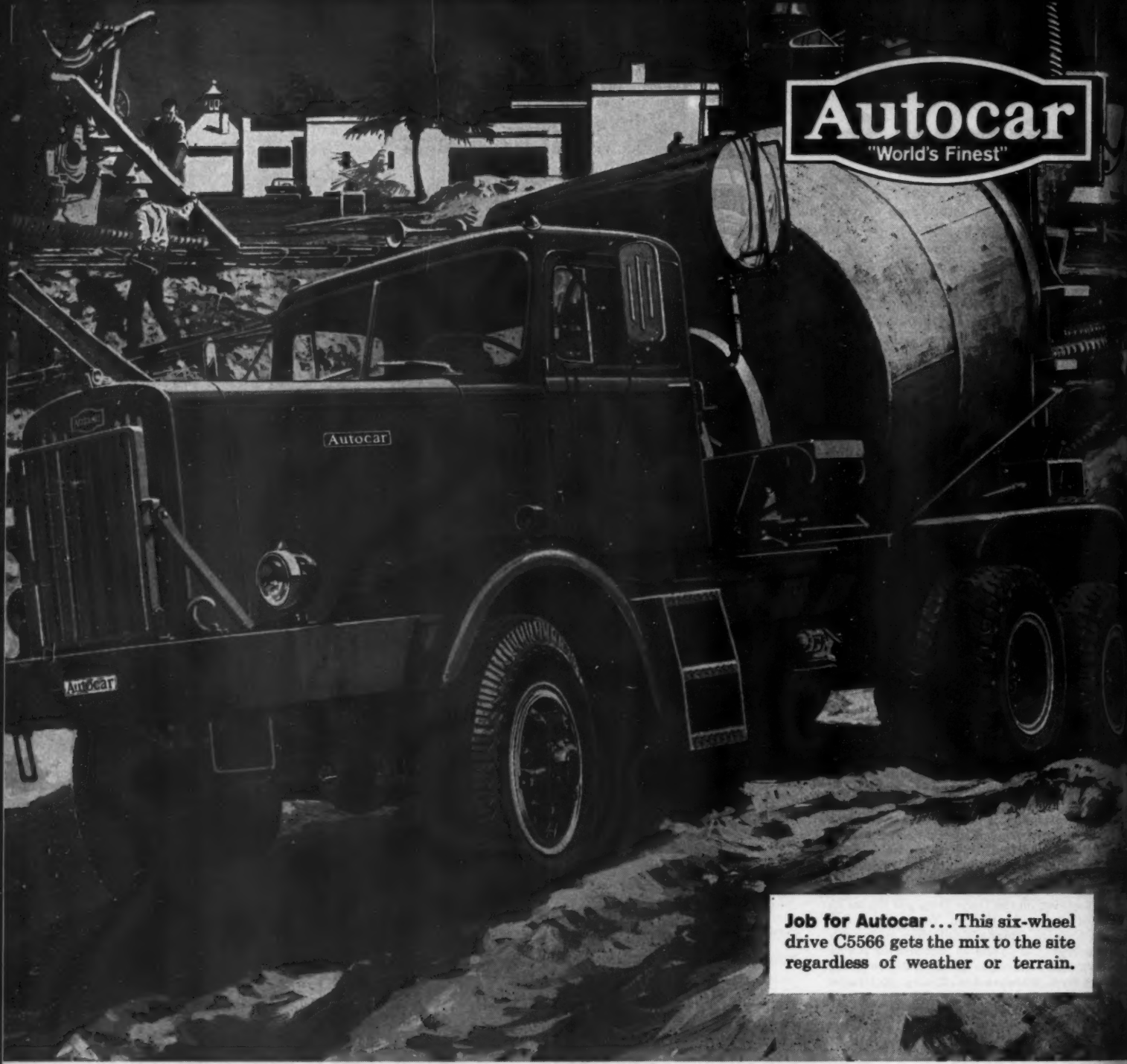
Eight years on the job for each of these men—Bob Friman, Red Nappe of Standard and Western's general superintendent, A. "Blackie" Blackwell. More than 80 million cubic yards of earth and shale have been moved under Blackwell's supervision. Red Nappe, Standard's staff engineer, has been working with contractors such as Western for 13 years. He has an engineering degree from the University of Missouri and, has completed Standard's Sales Engineering School.



You expect more from STANDARD and you get it!



For more facts, use Request Card at page 18 and circle No. 282



Autocar
"World's Finest"

Job for Autocar . . . This six-wheel drive C5566 gets the mix to the site regardless of weather or terrain.

New 6 x 6 mixer goes through thick and thin ... thanks to Autocar

This is really an all-weather, all-terrain job—one of those where nothing less than an Autocar would do. In a hole or up a hill, on shifting sand or in sticky gumbo, this all-wheel-drive Autocar delivers the mix

on schedule . . . a schedule that construction men know they can depend on day in and day out. Choice of an Autocar means that your truck will be custom-engineered to its specific job. Precision building

plus Autocar quality means that it will stay on the job longer with greater economy. Why settle for less than the "World's Finest?" White-Autocar comprehensive service throughout the U. S. A.

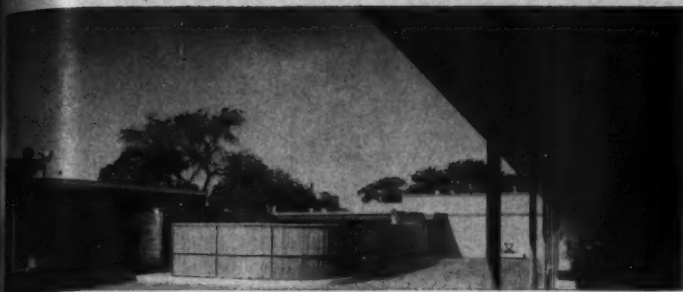
Autocar
"World's Finest"

Division of
The White Motor Company
Exton, Pa.

For more facts, use Request Card at page 18 and circle No. 283

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An asphalt-surfaced parking-lot area, with a 30-foot-deep storage shed sometimes used for parking, is separated from the L-shaped office building and patio by a sapling fence. The patio (right) echoes the building materials used in the glass-walled reception area. The dark green slate floor extends outside. The lannon stone wall is extended to shelter part of the area. Redwood for the ceiling is repeated on the overhang.



(Continued from page 53)

reception area is enclosed by a sapling fence.

The warehouse is a storage area for smaller building equipment, such as concrete mixer, pumps, vibrators, generators. A well equipped shop in the warehouse is used for repair and maintenance of equipment. No storage space is necessary for cranes; the contractor finds it more economical to rent them.

The offices are a model of convenience and beauty, featuring a front-wing reception area with window walls giving a view of shrubbery and trees in the patio. On the inside, an imposing lannon-stone wall rises to a redwood-finished ceiling and extends outside to shelter the patio. The dark-green slate floor also extends outside to form the patio.

Adjoining the reception area is a plans room where subcontractors can look over plans and specifications. A continuous table borders the walls.

In this wing also is a coffee lounge, with a built-in kitchen—often used by the office girls when they stay in for lunch.

Also in the front wing is an office area where two girls keep busy over the books and correspondence.

Of particular convenience to a contractor is the centrally located reference table and file rack for plans. Using a phone at the table, an estimator or company official, such as secretary-treasurer Clarence J. Anderson.

(Continued on next page)



Company receptionist Lillian Janis uses the built-in kitchen in the office area to cook a frozen dinner.

NOVEMBER, 1960

inside Story



A peek inside reveals the superior features inbuilt into every DELUXE CRANE BLOCK

- Extra Heavy Steel Plate
- Complete Through Sheaves
- AN V Steel Sheaves With Flame Hardened Grooves
- Extra Heavy Center Pin And Bearing Assemblies
- Tapered Roller Bearing For Easy Rolling Under Load

**COMPLETELY STREAMLINED EXTERIOR —
NOTHING TO HANG UP**

BE SPECIFIC
GET McKISSICK

THE BEST BLOCK FOR YOUR PURPOSE

McKissick

McKISSICK PRODUCTS COMPANY • DRAWER 768 • TULSA, OKLAHOMA

For more facts, see Request Card at page 18 and circle No. 284

(Continued from preceding page)

derson, can consult the plans as he talks with a field superintendent or another party.

The rear wing contains seven private offices, for the estimators and company officials, each with phone connections to the other offices. Typical of the offices is that of Elmer P. Anderson, who uses two large desks—one for papers and one for plans—in preparing an estimate.

Interior walls make use of a variety of building materials. Concrete block and brick are sometimes left exposed. In some offices, the walls are finished with oak paneling or with grass cloth. Office floors are of cork. All offices are roomy and bright, with natural light from large windows.



"I can't understand why someone keeps moving this file drawer I use the most down to the bottom."

For more facts on insert, use Request Card at page 18 and circle No. 287

The buildings reflect the attitude of company president Glenn J. Chell, a perfectionist who believes that a contractor should do his utmost to build honestly and well. In his effort to accomplish this, his company often does, at its own expense, many things that are not in the contract.

The 46-year-old president of the firm believes that the two professions of building and designing should be kept separate. A contractor should not accept "package deals," in which he hires an architect to do the designing or designs the structure himself.

The headquarters building is a handsome and functional example of Chell's theory in practice. It is standing proof of what can be done when a contractor decides to build a background that is his own best advertisement.

The Building

HOT ASPHALT IN 1 HOUR!



PATENT NO. 2820451
Other Patents Pending

The NEW Chattanooga "M" Heater ... No night firing ... No weekend attention required!

AUTOMATIC OPERATION

Just press two buttons... you'll have hot asphalt in less than one hour—capacity to operate even the largest asphalt plant.

In use nationwide -- check with some of the satisfied customers:

FUEL SAVINGS

Fuel savings alone will pay for the Chattanooga "M" Heater in less than a year. Exhaust temperature averages only 10° F. above asphalt temperature... over 90% efficient!

WEST: Griffith Company
Los Angeles, California
SOUTH: Warren Brothers Roads
Nashville, Tennessee

PORTABILITY

The Chattanooga "M" Heater is complete in one compact trailer. Ready to tow like a transport in 30 minutes, simply disconnect four connections. Equipped with air brakes.

NORTH: Rieth-Riley Construction Co.
Goshen, Indiana
EAST: Sam Finley, Inc.
Roanoke, Virginia

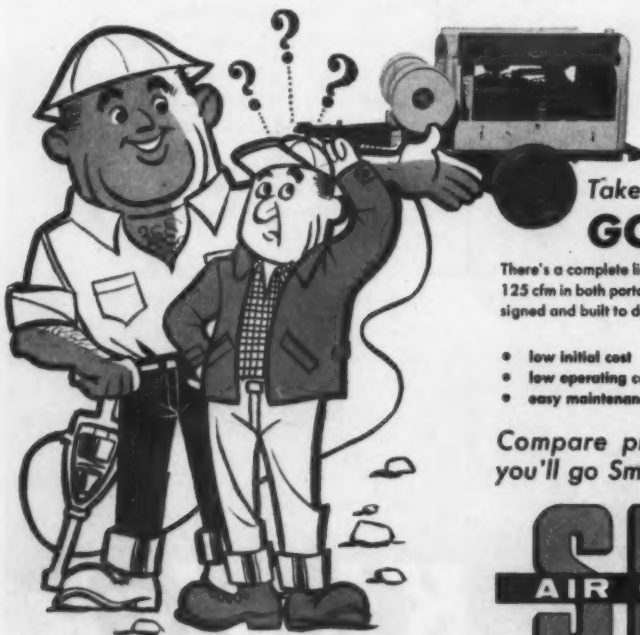


INDUSTRIAL BOILER CO., INC.

Post Office Box 9126, Chattanooga, Tennessee

For more facts, use Request Card at page 18 and circle No. 285

WRITE FOR
FREE FOLDER



ALL "SHOOK UP"
DECIDING ON AN
AIR COMPRESSOR?

Take "Hardrock Smitty's" advice and
GO SMITH!

There's a complete line of Smith compressors ranging in size from 45 cfm to 125 cfm in both portable and stationary models. The Smith compressor is designed and built to deliver years of trouble free service under all conditions.

- low initial cost
- low operating cost
- easy maintenance
- simple, compact design
- quick starting
- single stage compression

Compare price . . . compare job results
you'll go Smith!

SMITH
AIR COMPRESSORS
SMITH

GORDON SMITH & COMPANY, INC., Bowling Green, Ky.

Ask your dealer for an "on the job" demonstration. (write us for complete information and the name of your nearest dealer)

For more facts, use Request Card at page 18 and circle No. 286

Test new warning unit that keeps cars in lane

The Electronics and Instrumentation Department of GM Research Laboratories has developed an experimental device to warn drivers when they're too close to the pavement edge or center line. Called Electro Lane, the device was demonstrated to the Highway Research Board, Washington, D. C., early this year.

Electro Lane will be tested on vehicles using the 4-mile Ride and Handling Loop at General Motors Proving Grounds. The loop is similar to a conventional 2-lane highway. A wire in the pavement in the center of each lane radiates low-frequency (2 kilocycle) power.

When a car swerves to the left or right, electrical signals from the road are picked up by ferrite core coils on either side of the front bumper. Signal strength is determined by the coil's distance from the road wire. From the pickup coil the signal is amplified and fed to one of the two warning lights.

In addition, the signal from either pickup coil is applied to a network that feeds a speaker only after a preset level is reached. Thus, a motorist too far toward the pavement edge or the roadway center line will be alerted by light or sound or both.

A-C buys control of French company

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has bought controlling interest in Etablissements de Constructions Mecaniques de Vendevre, S. A. A manufacturer of air-cooled diesel farm tractors, industrial engines, and engine-generator sets, the French company has headquarters in Paris and manufacturing facilities in Dieppe and Vendevre.

Distribution of the company's products in France will be handled by its own sales organization, while distribution to other world markets will be handled by Allis-Chalmers International.

CONTRACTORS AND ENGINEERS

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Converting Niagara's powerful water flow into 2,190,000 kilowatts



American Steel & Wire
Division of
United States Steel

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Contractors move millions of yards of rock and materials with

Tiger Brand Wire Rope

Before the first kilowatt of electricity is produced at the new Niagara Falls generating plant of the Power Authority of the State of New York, close to a billion dollars worth of construction will have been completed. At the main plant alone, 10 million cubic yards of rock and overburden were blasted loose and removed. Over a million cubic yards of concrete and 62,000 tons of steel will be placed. Altogether, in the five major projects that make up the job, some 42 million cubic yards of rock and earth will be moved.

Wire rope does the backbreaking work. Everywhere you look at Niagara you see USS Tiger Brand Wire Rope hard at work. Big shovels ram into the rock. Revolving cranes are pouring concrete and hoisting heavy turbine parts. Scrapers are scooping up rock to make a huge lake.

On all these jobs, wire rope supplies the connecting link that turns horsepower into profitable work done. The rigging superintendent who has been in construction for 26 years says, "I never cease to be amazed at the strength and capability of wire rope."

USS Tiger Brand reduces costs. Where costs are figured in fractions of a cent per cubic yard, every hour of extra service means dollars in the contractor's pocket. On seven revolving cranes rigged with special Tiger Brand Rope, they were getting long service to begin with—then they reversed the ropes and are getting double the life. This is just one case among many, where it paid to buy the best rope. Tiger Brand field service representatives were on the job all times helping to make proper selections.

USS and Tiger Brand are registered trademarks

Engineering Consultants—Uhl, Hall and Rich—Boston

General Contractors:

Bechtel-Chapman & Scott Corporation

Intake structures and dredging; Water conduits,

Section I; Niagara Generating Plant

McSavin-Winkelman—Water conduits, Section II

McDeFelice—Water conduits, Section III

Channel Constructors—Peter Kiewit, Morrison Knudsen,

Perini, Walsh—Tuscarora reservoir, aggregate plant

and canal for the fore bay area, Section IV.

Tuscarora Contractors—Arundel, Hunkin-Conkey, L. E. Dixon—

Tuscarora Pump—Generating Plant.



Niagara Generating Plant—Eight giant revolving cranes, rigged with USS Tiger Brand Wire Rope, are busy pouring concrete and setting materials. Extra long service life is being obtained from these cranes. And for preparation of this site, about 9 million yards of rock and overburden were removed with shovels using Tiger Brand.



Tuscarora Pump—Generating Plant—Pumps water into storage reservoir at night and generates power during the day. Photo shows turbine head cover being placed with USS Tiger Slings from one of the four gantry cranes. Hoist ropes have been in use about a year which is considered real good service.



Dredging the intake—Second largest dredge on the lakes with the fastest cycle. Scoops 12 yards, 2" dia. USS Tiger Brand hoist rope must withstand considerable impact, vibration, corrosion and abrasion.

Piling rock at aggregate plant—Largest temporary crushing plant in the world. Produces 2,000 tons per hour. Conveyor booms are rigged with USS Tiger Brand Wire Rope.



Why USS Tiger Brand is your best buy. Tiger Brand Wire Rope is designed by one of the industry's most capable staffs of wire rope engineers. It is made by a company that maintains the most complete research and manufacturing facilities in the steel industry. When you buy Tiger Brand you get the right rope for the job. Experienced field service representatives are as close as your telephone. Write American Steel & Wire, 614 Superior Ave., N.W., Cleveland 13, Ohio, for further information, or contact your local USS Tiger Brand distributor.



USS Tiger Brand Wire Rope for special uses

The tremendous variety of equipment used at Niagara Falls called for an even greater variety of wire ropes. Tiger Brand field service engineers were on the job to help make selections and offer money-saving tips on how to get the best service.

Jobs were analyzed and every type of wire rope needed was kept in stock for fast delivery. Everything from bulldozer rope to spin-resistant rope was supplied without difficulty. These are a few of the reasons why USS Tiger Brand is your best buy in wire rope. For complete information, call or write American Steel & Wire, Dept. 0394, Cleveland 13, Ohio.

USS American Steel & Wire Division of United States Steel

Columbia-Geneva Steel — San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron — Fairfield, Alabama, Southern Distributors
United States Steel Export Company, Distributors Abroad



This mark tells you a product
is made of modern, dependable Steel.



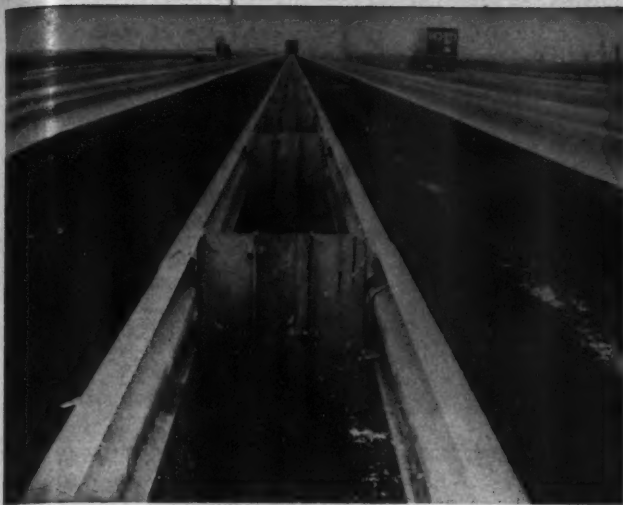
Pouring concrete with 6x30 special Tiger Brand Rope.



Handling materials with Spin-Resistant rope.



Revolving rigging showing variety of ropes.



On the New Jersey Turnpike, Armco Flex-Beam guardrail has been installed to reduce collision hazards caused by out-of-control cars crossing the median.

Median barriers added by New Jersey Turnpike

■ The New Jersey Turnpike Authority has installed 33 miles of median barriers to reduce the danger of head-on collision from cars going out of control and crossing the median strip.

Recently, a 7-mile stretch in the northern section was completed, with the installation of a double-faced line of Armco Flex-Beam guardrail. Plans have been made to install this type of median barrier along the entire 118-mile length of the heavily traveled, 6-lane highway, with the exception of one stretch where the grass median strip is about 90 feet wide.

Hyster personnel news

■ Hyster Co., Portland, Ore., has made several new appointments. Supervisor of special-products engineering department activities in Portland and in Danville, Ill., is Hugh Richmond. He will be replaced as supervisor of the department's Danville branch by Dick Chase.

New supervisor of advertising and sales promotion activities for the company's Industrial Truck Division is William C. Brewer.

Jack A. Cairns, previously with the advertising and sales promotion department, has been moved to special-products engineering.

Brewer and Cairns both work out of Portland headquarters.

Jack P. Greer has been named manager of Hyster's retail branch in Chicago.

William C. Harmon succeeds Greer as midwest regional manager. He served as midwest regional representative prior to his new position.

Stoody appoints

■ Max Kadonoff has been appointed field representative for the eastern part of Canada by Stoody Co., Whittier, Calif. He will work on hardfacing problems in Ontario, Quebec, and the Maritime Provinces with the Stoody distributor, Air Reduction Canada, Ltd.

Competition announced in arc-welding design

■ The James F. Lincoln Arc Welding Foundation, Cleveland, Ohio, has announced a \$25,000 Award Program for Progress in Arc Welded Design.

Cash awards will be given for papers describing the welded-steel design of either machines or structures. Any U. S. resident who has taken part in the design, planning, or production of the design described in his paper is eligible to enter the competition.

Papers entered in the structural competition must discuss the use of arc-welded steel in the design of either a complete structure or part of one. Entries will be judged primarily on achieved or expected results in the areas of over-all cost, appearance,

and public acceptance, plus savings realized or anticipated with the use of arc welding.

In both the structural and the mechanical divisions, a total of \$12,500 worth of awards will be given to 38 papers. First award in each division will be \$3,000; second and third awards, \$1,500 each; five fourth-place awards, \$500 each; ten fifth-place awards, \$250 each; and twenty sixth-place awards, \$100 each.

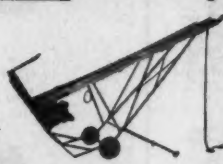
Complete rules and additional information are available from the James F. Lincoln Arc Welding Foundation, P. O. Box 3035, Cleveland 17, Ohio.

The contest closes July 17, 1961.

This material hoist makes money for you!



FLIP!...



Sasgen SELF-ERECTING LIFTAMATIC HOIST

GOES UP IN 2½ MINUTES—A ONE-MAN JOB!

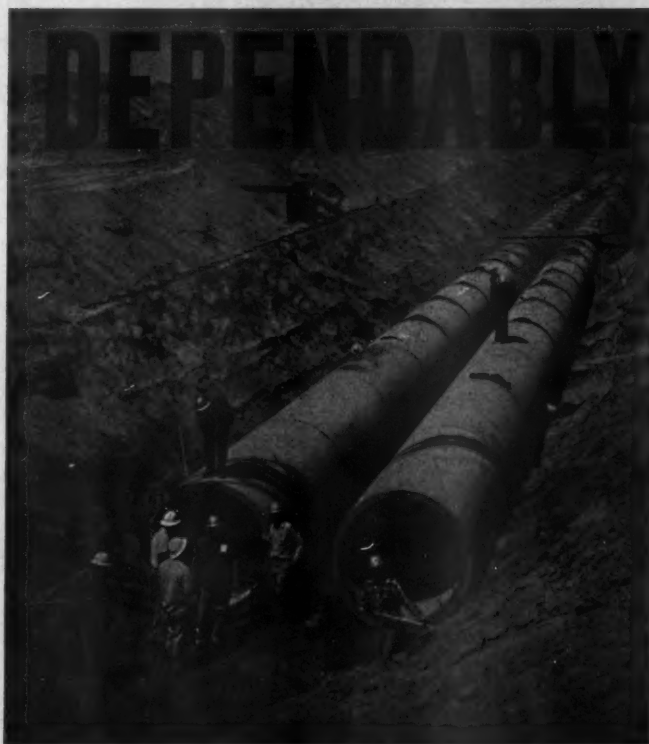
This is the hoist that goes where you go, does what you want it to do—safely and dependably, built for heavy-duty service. Can be disassembled and shipped anywhere by common carrier.

Aluminum rails telescope, provide unloading heights from 13 to 40 feet. Has 7½ hp. gasoline engine and centrifugal-type governing downbrake (1000 lb. capacity) having 125 fpm. line speed. Remote control and adjustable limit stops standard. Side-loading platform is 34 x 60 inches to handle most loads. Also with reversible electric motor (500 lb. capacity). Write now for details—production is limited.

Sasgen DERRICK COMPANY
MANUFACTURERS OF EQUIPMENT FOR THE CONSTRUCTION INDUSTRY

3127 WEST GRAND AVE.
CHICAGO 22, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 288



DEPENDABLY DRY

Being able to count on your dewatering equipment means many things. It means the job well done, it means time saved, it means accurate bids, it means profit for you. Dealing with Stang, you have just such assurance: that your water-handling job, no matter where, or what type, will be done and done right — by Stang.

JOHN W. STANG CORPORATION
Engineers and Manufacturers of Dewatering Equipment
8221 Atlantic Avenue, Bell, Calif.
Omaha • Tulsa • Minneapolis • St. Petersburg
Mobile • Tacoma

For more facts, use Request Card at page 18 and circle No. 289

Distributor Doings

Koehring shows its line



The Model 60 Koehring Dumptor, a 6-yard off-road hauling unit, is here being loaded by a 2-yard Model 205 Skooper in a demonstration simulating actual job conditions.



A concrete paving job was simulated with a new Koehring 34-E Tribatch and Koehring transverse finisher riding on Metaforms. On a 60-second mix time, the paver has a capacity of 124 batches per hour.

One of the most diversified manufacturers of construction machinery, Koehring Co. of Milwaukee, put on an equipment show of its products from September 19 to 23 at its 144-acre proving grounds near Waukeesa, Wis. Attending the pair of 2-day sessions, staged by Koehring's seven construction-machinery divisions, were approximately two thousand contractors, distributors, and miscellaneous equipment users. They saw more than 40 different units of equipment displayed and demonstrated, most of them under actual job conditions.

Some machines were new, while others have been just recently developed or improved. They included excavators, cranes, hauling units, paving equipment, compactors, drilling and boring machinery, trenchers, material handlers, and batch plants. Unveiled for the first time was a pilot model of the 505 Skooper. This crawler-type digger and loader has a 4½-yard general-purpose bucket that can be interchanged with a 3½-yard rock bucket or 6-yard material-rehandling bucket. Production models of this rig will be available by the middle of next year.

Other recently developed machines included the 34-E Tribatch paver, Parsons-Shawnee 1500 backhoe, Kwik-Mix 1-yard front-end loader, C. S. Johnson Rover transit-mix mobile batch plant, a 210-foot tubular boom for the 555 truck crane, Fla-



Koehring's 144-acre proving grounds, near Waukeesa, Wis., was the scene of a display and demonstration of more than 40 pieces of construction machinery before an audience of distributors and contractors in September. The towering 555 truck crane has a 170-foot boom and a 40-foot jib.

herty power broom, 100 Dumptor with a 15-ton payload capacity, and the Buffalo-Springfield 3-axle vibrating roller.

President Julien R. Steelman in his welcoming address stated that at Koehring the development of more effective equipment has carried top priority. He explained that there are

University tests prove this steel guard rail has kept its strength ...after 20 years of continuous service



The first section of steel beam guard rail installed in Pennsylvania (in 1940) was selected for supplying specimen rails to test the strength of the steel after 20 years of continuous service.



Test rails were selected and removed, including one which was known to have been involved in a collision.

Here is proof that steel guard rail keeps its strength even after 20 years of continuous service in every kind of weather. In order to demonstrate that the strength of steel rail is *not* affected by time or elements, a leading university made the following test:

Rails were taken from the first installation of steel beam guard rail in Pennsylvania, erected in 1940. All test rails had seen 20 years of service with very little maintenance, and one was known to have been involved in a collision.

A test was set up at the university's research center in which the rails were subjected to loads applied in increments of 200 lb at the center of a 12 ft clear span, traffic-side up. Deflections were measured accurately.

Each steel guard rail tested passed with flying colors, remaining well within the test requirements. After 20 years of service, these rails had approximately the same strength as when they were first installed. Further, the test indicates that notions about steel losing strength after long periods of continuous exposure just aren't true.

For detailed information about this test, write to us at any sales office, or direct to Bethlehem, Pa. And for more information on steel beam highway guard rail, ask for a free copy of our booklet.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Sales: Bethlehem Steel Export Corporation



For Strength
... Economy
... Versatility



two routes to take in achieving greater effectiveness: (1) to increase the areas of use of a particular type of equipment; (2) to specialize equipment so that it will do a particular class of work more efficiently than any general-purpose tool. Koehring generally follows the latter route, according to Steelman.

Ed Hill, vice president for marketing, told the large gathering to expect a forward thrust to business immediately after the presidential election, regardless of who is elected. Hill looks for a "growth of boom proportions in a matter of a few short years."

THE END

New dealers for Lima

Four new dealers have been appointed by the Baldwin-Lima-Hamilton Corp., Construction Equipment Division, Lima, Ohio. Lima shovels, cranes, pullshovels, and the Lima Roadpacker vibratory compactor are being handled by Construction Equipment Co., Pittsfield Road, Epsom, N. H., for that state, and by Atlantic Equipment Co., Savannah, for 11 counties in southeast Georgia.

El-Jay Mfg. Co., Inc., 3440 Franklin Blvd., Eugene, Ore., and Eastcoast Equipment Co., U.S. 22, Mountainside, N. J., are new distributors

for Lima Austin-Western crushing, screening, and washing equipment. El-Jay will cover all but two counties in Oregon, and five counties in Washington. Eastcoast will handle 13 counties in northern New Jersey.

Worthington distributors

Worthington Corp., Harrison, N. J., has appointed Medico Industries, Inc., 11 Tompkins St., Pittston, Pa., a distributor of its construction machinery. Medico will handle Worthington mixers, pavers, and aggregate reclaimers in 16 counties in northeast Pennsylvania.

Barrett-Haentjens Sales Co., 225 N. Cedar St., Hazleton, Pa., has been named distributor for Worthington compressors and pumps in the hard-coal field region of northeast Pennsylvania.

Bell Compressor Rental Co., 101 I St. S.E., Washington, D. C., will handle sales and service for Worthington portable mixers, contractor pumps and air tools, and portable air compressors in the District of Columbia, 4 counties in Virginia, and 5 counties in Maryland.

Distributor of Worthington equipment in 8 counties in Ohio is Air City Equipment Co., Ferry Road, Bellbrook, Ohio. The company's franchise includes portable rotary compressors, contractors' tools, mobile drills, mixers, pavers, and aggregate reclaimers.

Highway Trailer appoints

Three new distributors have been named by the Highway Trailer Co., a division of Highway Trailer Industries, Inc., New York, N. Y. The dealers will sell and service the full line of Highway semi and 4-wheel trailers.

The dealer in eastern Pennsylvania is Medico Industries, Inc., Pittston. Crenshaw Equipment Co., Richmond, is the distributor for Virginia. Quad-Cities White Autocar, Inc., Bettendorf, Iowa, will handle the territory in western Illinois and eastern Iowa bordering the Mississippi River.

Olin Mathieson names

Olin Mathieson Chemical Corp., New York, N. Y., has named Flack Equipment Co., Dayton, Ohio, a distributor. Flack will handle Ramset powder-actuated fastening tools and Shure-Set hammer-in tools in the area.

Flack's general manager is Richard Schumacher; the sales manager is G. A. McCune.

GM Diesel appoints

Lawless Bros., Inc., 4000 Rosedale Highway, Bakersfield, Calif., has been named a distributor for engines manufactured by the Detroit Diesel Engine Division of General Motors Corp., Detroit, Mich. The dealer will handle sales, service, and parts for GM Diesel in seven counties in California.

Thomas E. Lawless is president and general manager of the new distributorship, which is building an addition to its present sales and service facilities.

M-W Equipment appoints two new sales engineers

M-W Equipment Co., division of Metalweld, Inc., Hunting Park Ave. and Fox St., Philadelphia, has appointed Samuel Fabian and Walter F. Campbell as sales engineers.

Fabian, who has had experience in civil engineering and in heavy-equipment sales, will handle contractor accounts in New Castle, Del., and in Berks, Chester, and Delaware counties in Pennsylvania. Campbell



At the university, the test rails were mounted so that loads could be applied at the center of a 12-ft span. Loads were in 200 lb increments and deflection carefully measured. Result: steel guard has approximately the same strength after 20 years of service as when it was first installed.

See Bethlehem's exhibit on three of the "Top Ten Plants of 1960" at the Industrial Building Exposition and Congress, December 12-15, in the New York Coliseum.

BETHLEHEM STEEL

For more facts, use Request Card at page 18 and circle No. 290

distributor doings

will service industrial accounts in Philadelphia and southern New Jersey.

Equipment distributed by M-W includes Gradall and Hopto hydraulic excavators; Hough Payloaders; Worthington compressors, truck mixers, and air tools; Lima and Schield Bantam cranes and shovels; Pitman aerial platforms and hydraulic cranes; Erie Strayer batching plants; and Esco products.

New dealer for Yale

The Yale Materials Handling Division of the Yale & Towne Mfg. Co., Philadelphia, Pa., has appointed

Western Machinery Co., 2300 S. Main St., Salt Lake City, Utah, a franchised representative for the sale and service of Yale tractor shovels and industrial lift trucks. The dealer has sub-branch sales operations at 3320 Western Ave. in Boise, Idaho, and at 500 W. 19th St. in Idaho Falls.

Miller Swivel Products appoints distributor

The Hoisting and Rigging Division of Colorado Fuel & Iron Corp., 6609 Supply Row, Houston, Texas, is now exclusive dealer in its area for Miller Swivel Products, Pomona, Calif.

The dealer will handle the complete line of Miller Precision ball-bearing swivels, headache balls, insulator links, taglines, and blocks.

Parker-Hannifin appoints

Parker-Hannifin Corp., Cleveland, Ohio, has appointed Holden Engineering Co., 2108 Payne Ave., Cleveland 14, a distributor for Parker industrial hose and re-usable hose fittings. The products are made by the company's Fittings and Hose Division, Cleveland. Holden was previously franchised for Crown air-system regulators, filters, and lubricators made by the Hannifin Co. division in Des Plaines, Ill.

New dealers for Parsons

The Associated Supply Co., 1034 Humble Drive, El Paso, Texas, has been appointed by the Parsons Co., division of Koehring Co., Newton,

For more facts on insert, use Request Card at page 18 and circle No. 292

Iowa, to sell and service the complete line of Parsons ladder and wheel-type trenchers. The new distributor will serve nine counties in western Texas and Otero and Dona Ana counties in southern New Mexico.

Dal-Tex Equipment Co., 3226 Cedar Crest Blvd., Dallas, Texas, is also a new dealer for Parsons.

The dealer will handle the entire line of Parsons-Shawnee utility-tractor attachments in Arkansas, Louisiana, Texas, Oklahoma, New Mexico, and sections of Missouri, North Carolina, Tennessee, and Kentucky.

L-W names dealer

LeTourneau-Westinghouse Co., Peoria, Ill., has appointed the Finn Machinery Co., 3062 N. W. 75th St., Miami 47, Fla., a distributor for its earthmoving equipment in ten counties in southern Florida.

Neil A. Finn, president of the company, will direct the sales force until a manager can be appointed for that department. He has been representing leading construction-equipment manufacturers in Florida for the past seven years.

Harnischfeger Corp. names new dealer

Embry Tractor & Supply Co., Inc., 3936 Park Drive, Louisville, Ky., is a new dealer for P&H construction and mining equipment which is made by the Harnischfeger Corp., Milwaukee, Wis.

The firm will sell and service the complete line of P&H crawler and rubber-mounted power cranes and shovels in Kentucky and southern Indiana.

The dealer maintains a branch office and shop at 603 W. Main St., Newburgh, Ind.

Construction management discussed in new book

"Construction Contracting," by Richard H. Clough, published by John Wiley & Sons, Inc., considers the fundamentals of management as applied to the contracting business.

This 382-page book discusses the five management areas of organization, staffing, directing, planning, and controlling. Keyed to the small to medium-sized company, it includes chapters that give detailed information on legal forms, drawings and specifications, estimating and bidding, construction contracts, contract bonds, purchasing, construction insurance, financial policies, cost control and scheduling of operations, labor relations, and safety.

Also included is a 54-page appendix giving examples of typical specification outlines and construction contracts and agreements as well as ledger accounts.

Priced at \$9.75, copies of the book may be obtained from the publisher located at 440 Park Ave. South, New York, N. Y.

CONTRACTORS AND ENGINEERS

"Time study"
TORQMATIC

3-SPEED
cuts loader shifting
slow-downs

Cut loader shifting slow-downs and you're bound to speed loader job-cycles.

And no loader transmission cuts shifting slow-downs like "Time-Study" TORQMATIC. Reason? It needs only 3 speeds where other hydraulic transmissions need 4 . . . naturally, TORQMATIC-equipped loaders crowd, dig, load and travel faster.

That's just one reason why 9 out of 10 leading loader manufacturers use "Time-Study" TORQMATIC.

More? This single-unit converter-transmission team has fewer hoses to plug, leak or crack . . . has clutches up to twice the diameter of those used in other hydraulic transmissions . . . is designed to need no major service for two engine overhauls.

What's more, it's easier and cheaper to repair and maintain. Gears can be replaced in about 4 steps where other hydraulic transmissions need over 20.

It's easy to see why more and more loaders are carrying the TORQMATIC label — why more and more loader buyers are talking TORQMATIC. Want to know more? See your loader dealer or write Allison today.

Allison Division of General Motors
Indianapolis 6, Indiana

In Canada: General Motors Diesel Ltd., London, Ontario

Allison

TORQMATIC®
DRIVES

**THE MODERN DRIVE FOR
MODERN LOADERS**

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ANNOUNCING...

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INEERS

Mack Model

30-TON DUMPER

made to the measure
of your heavy
hauling jobs



Mack Model

30-TON DUMPER

*with the components to make
your hauling jobs more profitable*

Made to master the heavy loads increasingly commonplace in the mining, quarrying and construction industries is Mack's new M-30X Model four-wheel end-dumper chassis.

This new addition to the Mack line of off-highway vehicles retains many of the time-proved features that have won Mack construction trucks worldwide fame

for complete reliability and performance far surpassing lesser vehicles.

Add the many significant features exclusive to the Mack M Model... features that make the M-30X Model even more rugged, powerful, dependable and safe... and you have a vehicle sure to be first choice among those who must haul huge tonnages profitably.



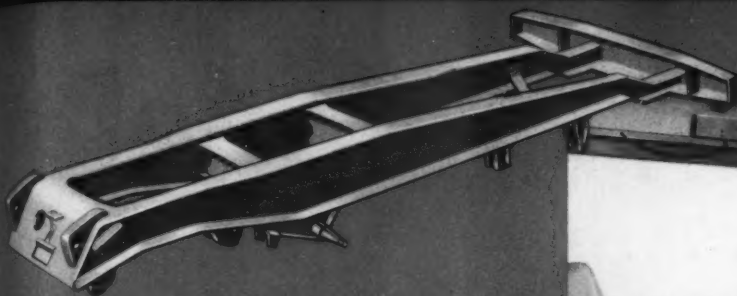
Heaviest-duty Mack rear axle, combining hypoid carrier with Planidrive[®], keeps M-30X hustling where others bog down. With Mack's patented Planidrive planetary gear drive in the rear axle hubs giving the dig-out torque needed for heavy off-highway hauling, the Mack Model M-30X boasts one of

the strongest, longest-lived rear axles of any 4-wheel dumper in the field. Drive is through exclusive single-reduction hypoid Mack carrier, with planetary gears. Suspension is by extra long, extra broad semi-elliptic progressive-rate leaf springs with cam face slipper ends and radius rods.



New tubular front axle withstands heavier loadings. Steel tubing, seven inches in diameter, with walls $\frac{3}{4}$ " thick is welded to cast ends to provide a reversed-elliott front axle that withstands the most punishing loads of quarrying, construction or mining.

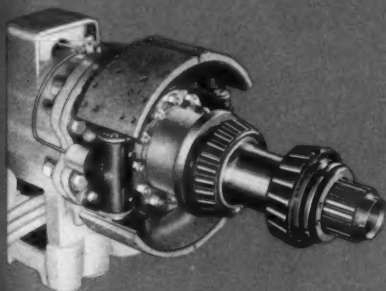




Five crossmember frame slings off jarring drop loads of big shovels. Typical of Mack off-highway truck construction practices, the frame of the M-30X Model is extra solid, extra strong. Five crossmembers, including integral front and rear bumpers, tie alloy steel fabricated I-beam main rails together to provide wrack-free support. Crossmembers are welded to web of main rails to prevent stress concentration in flanges. All corners are gusseted, with gussets welded to webs.



New massive, functional cab for extra strength, driver comfort. Completely new in appearance, the Mack M-30X cab is not only rugged, but completely functional. Efficient modern lines offer a reverse-slope windshield which lessens glare and reflections while reducing dirt and dust accumulation. Forward position permits heavier loading of new, larger-capacity set-back front axle. Offset cab design provides maximum vision forward and behind for quicker spotting, quicker dumping, safer truck operation. Piano-hinged cab doors give extra strength, double cab venting gives extra comfort. Interior layout features easy accessibility and instrument visibility... lets driver concentrate on the job.



Unsurpassed stopping power—another M-30X feature. Shouldering a 30-ton payload demands safe, sure braking power. But the M Model's braking system more than meets the challenge. Front brakes are air, applied by a 12 cu. ft./m. compressor, while rear brakes are air-hydraulic. Separate master cylinders at rear brakes provide safety factor in case of failure at either wheel. All brakes are internally expanding with amplified adjustment.



Mack Model M-30X

Built to extra-heavy-duty specifications

PAYLOADS: Rear dumper, 30 tons

WHEELBASE: 165"

PLATFORM LENGTH: 144"

OVER-ALL LENGTH: Front bumper to end of body, 323"

DIESEL ENGINES: 320 hp to 380 hp, six-cylinder diesel engines

COOLING SYSTEM: 1500 sq. in. frontal radiator, continuous finned, flat-tube

ELECTRICAL SYSTEM: 12-volt, 55-amp.

STARTING: Electrical, 24-volt

TRANSMISSIONS: Mack, selective, constant-mesh, 8 speeds forward, 2 reverse; optional Torqmatic transmission and Torqmatic brake; integral torque converter and planetary transmission selective shift

CLUTCH: Two-plate, air-assist with manual actuation

REAR AXLE: Single-reduction hypoid carrier, with final reduction Mack Planidrive planetary gear reduction within wheel hubs

FRONT AXLE: Mack, heavy-duty, tubular, welded cast ends

BRAKES: Front, air; rear, air-hydraulic; rear wheels with separate air and hydraulic cylinders to prevent complete loss of braking in event of failure at one wheel; 12 cu. ft. compressor

FRAME: Alloy steel, wide-flange I-beam, 137 section-modulus

STANDARD BODY: Heavy-duty 100,000 psi alloy steel

CAPACITY: Struck, 20 cu. yd.; heaped SAE rating, 26.5 cu. yd.

SPRINGS: Front, semi-elliptic, progressive rate; rear, semi-elliptic, progressive rate with cam face slipper ends and radius rods

WHEELS: Cast-spoked

TIRES: 18.00 x 25, 24-ply tubeless on 13.00 rims

STEERING: Hydraulic power-steering, 30° turning radius

DUMP HOIST: Twin, double-acting, outboard mounted, two-section telescopic cylinder assembly, providing 60° dumping angle

POWER TAKEOFF: Mack, 50 hp

OPTIONS: Air-starting; rock ejectors



MACK FIRST NAME FOR TRUCKS

Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario

Mack M-45SX Model—six wheel, 45-ton mining-duty dumper. Unmatched capacity in the heavy-duty hauling field is offered in this companion to the M-30X—the remarkable Mack Model M-45SX six-wheel dumper chassis. Made primarily for open pit and strip mining operations, the M-45SX is a perfect vehicle for any operator who must move huge tonnages within the shortest possible time.

For information about either of these two brand new additions for the mining, quarrying and construction industries, see your Mack branch or distributor. Let him tell you the full story of their capabilities.



PRINTED IN U.S.A.

7940



SURFACE IRREGULARITIES in the concrete floor of a new supermarket in southern California are being removed by a Bump Cutter. This machine, developed by Concut Sales, Inc., El Monte, Calif., consists of a self-propelled unit and a cutting head of diamond saws. There are 100 saws, mounted on the same axle, in the 18-inch-wide roller head suspended between the front and rear wheels of the machine. For trimming this floor, the head was set to remove any surface variation of more than 1/8 inch that occurred within the 16-foot span between the wheels. The burlap-type surface texture left by the head was found to be an ideal base for laying asphalt-tile floor covering.

Burns & Roe to install new computer system

Burns & Roe, consulting engineering and construction firm of New York City, has ordered a transistorized IBM 1620 data-processing system as part of its program of expansion and improvement of engineering services.

The computer, which can perform 300,000 logical decisions in one minute, is expected to speed solution of such calculations as shield thickness for atomic reactors, free-form structural computations, and stress analysis on steel building framework.

"Fortran," a new method of programming, will enable the firm's engineers and mathematicians to present computer problems in a language similar to that of traditional engineering notation. Special encoding and programming techniques will not have to be learned.

Department and division heads, as well as staff engineers, will be instructed in the use of the new system.

Electric Steel Foundry renamed Esco Corp.

Esco Corporation is the new title for the Electric Steel Foundry Co., Portland, Ore. The name was changed because Esco has expanded into fields other than the foundry business, and the old title was confusing. The company's products have been sold under the trade name Esco for a number of years.

Originally a supplier of cast-steel products for loggers and sawmills,

Esco Corp. has enlarged its line to include a variety of other industries. Besides its own products, the firm merchandises stainless-steel sheet, plate, bar, wire, tubing, and fasteners, as well as a stock of related plastic products.

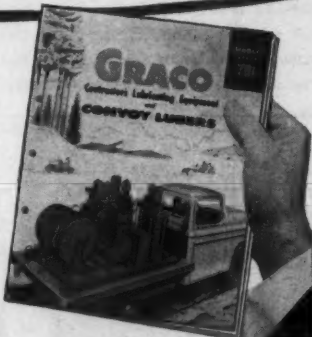
The company's main facilities are in Portland; district offices and warehouses are located in major U. S. cities.

Free GRACO IDEA BOOK ON CONVOY LUBE UNITS!

- Illustrates latest Graco Convoy Luber equipment.
- Shows typical luber layouts with detailed diagrams.
- Provides complete specs on Graco field luber units.
- Lists dozen of accessories for convoy luber work.

DESIGN YOUR OWN LUBE SERVICE TRUCK, fully equipped with grease, oil and air components you need! Get complete information from Graco's new Convoy Luber book—28 big pages that tell you how to do the best and quickest way.

See how to "job-plan" your Convoy Luber in six easy steps... get valuable charts, diagrams and specifications... learn about the latest Graco pumps, hose reels, and other



equipment that will make your lube truck the best on the road.

SEND FOR YOUR COPY of Graco's Convoy Luber handbook today—it's a valuable free guide you'll want to read from cover to cover!

GRAY COMPANY, INC.

1147 Graco Square • Minneapolis 13, Minnesota
(See phone book yellow pages "Lubricating Devices" for Graco Suppliers)

GRACO

For more facts, use Request Card at page 18 and circle No. 293

NOVEMBER, 1960

BUILT TO DIG!

Constant digging power throughout the digging cycle.

Wide head, upright bars for greatest digging power.

Correctly shaped scoops have no interior angles or projections; assure smooth, fast dumping.

Full complement of five sheaves for fullest digging power, readily adjustable to any lesser parts of line.

Weight concentrated at lower block for quickest opening and greatest digging power.

Brackets over hang to assure maximum power.

Independent (double) hinge suspension; scoops can dig individually.

Control type damper eliminates friction in starting digging cycle.



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Williams Bucket Division, The Wellman Engineering Company, 113 St. Clair Ave. N.E., Cleveland 14, Ohio

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For more facts, use coupon or Request Card at page 18 and circle No. 294

Two Koehring 34-E's, working from the inside shoulder, lead the mechanized spread paving $9\frac{1}{2}$ miles of Interstate 81 near Syracuse, N. Y., with 9-inch reinforced slabs 24 feet wide. Average production comes to 2,000 feet of slab daily.



Interstate concrete project features

A dual-paver train and high production

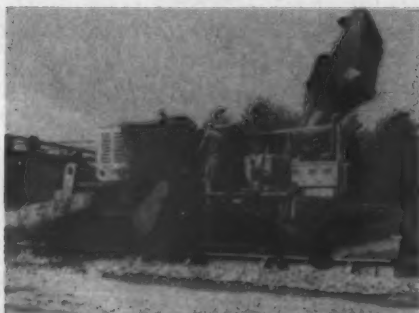
(Additional photo on front cover)



The lead paver dumps concrete ahead of a Blaw-Knox spreader, which strikes off the mix to a 6-inch depth so that wire-mesh reinforcing can be placed.



When the second paver catches up, a section is left for it to handle. Then it picks up work again on the top lift.



The Jaeger spreader is equipped with a full-width vibrator to consolidate the top $2\frac{1}{2}$ inches of the concrete. Blaw-Knox forms are used.



Transverse finishing and floating operations for the slab are done by a Heltzel Flex-Plane float-finisher, working behind the second spreader.

Contractors and Engineers staff article

A fully mechanized spread and top production characterized the paving of a $9\frac{1}{2}$ -mile section of Interstate 81, north of Syracuse, N. Y., by S. J. Groves & Sons Co., of that city.

For this \$4,800,000 project, the 9-inch reinforced-concrete slabs were placed in 24-foot widths by a concrete train led by two Koehring 34-E's. One dumped in front of a Blaw-Knox lead spreader that trimmed the mix to a $6\frac{1}{2}$ -inch depth. After wire-mesh reinforcing was laid, the second paver placed enough mix so that a Jaeger spreader could complete the slab to its required 9-inch thickness.

Paving train

Both pavers—one traveling forward and one in reverse—used the inside shoulder area. A tanker, connected to each paver by flexible lines, supplied water to the pavers as it traveled between them.

A second tanker, riding along the outside shoulder of the roadway, delivered water to the main feed tanker.

A flexible line was tied from the second tanker to a pipe section supported on the Blaw-Knox spreader; another flexible line connected the pipe to the main tanker. By handling the water delivery in this way, Groves eliminated any congestion along the inside shoulder area during refilling operations. It was also a unique way of transferring water across the slab.

A full-width vibrator behind the second Jaeger spreader handled consolidation of the top $2\frac{1}{2}$ inches of concrete. Following the second spreader was a Heltzel Flex-Plane float-finisher equipped with two transverse screeds and a rear float.

With this paving setup, Groves placed an average of 2,000 linear feet of 24-foot-wide pavement during the $9\frac{1}{2}$ -hour workdays.

The final touches to the slab were made by aluminum hand lutes and a burlap drag. This operation preceded the spraying of the green concrete with white-pigmented curing compound. A Heltzel spray machine handled this assignment.

The Blaw-Knox 9-inch side forms, held in place by form stakes driven

After work is done with hand lutes and a burlap drag, a Heltzel Flex-Plane spray machine applies curing compound.





The dry-mix batches are supplied to the job from this Blaw-Knox plant, which has a 4-compartment aggregate bin and two cement silos of 600 and 400-barrel capacity.



A Blaw-Knox subgrader is being used to obtain the desired grade between the forms ahead of the paving train. Blaw-Knox 9-inch forms are being maintained some 2,000 feet ahead of the lead paver.

by an air hammer powered by a Le Roi Tractair compressor, were stripped the day after concrete was placed. Groves tried to maintain forms at least 2,000 feet ahead of the lead paver at all times. After form stakes were removed by an automatic Nelson pin puller, the form sections were loaded onto a truck to be moved ahead of the paving spread.

Joint cutting

Transverse joints along each of the two 24-foot roadway slabs were sawed during the night following placement. Each joint was cut $\frac{3}{4}$ inch wide and 2 inches deep by a portable Clipper saw with abrasive blades. As joints were cut, they were covered with strips of curing paper to prevent exposure of the green concrete in the joint. The rest of the slab was protected by the sprayed curing compound.

The longitudinal joints were cut 5 days after concrete placement. This was done with diamond blades in the Clipper saw. After complete curing, the joints were filled with a Para-Plastic joint sealer.

Batch plant

Supplying the paving spread was a Blaw-Knox batch plant consisting of a 4-compartment aggregate bin and two cement silos with 400 and 600-barrel capacities. A Bucyrus-Erie M-B crane, equipped with a $2\frac{1}{2}$ -yard reclaiming bucket, was used to charge the aggregate bin compartments from the surrounding stockpiles.

Cement, delivered to the plant site in truck tankers, was charged into the cement silos by pumps on the tankers. An auxiliary 400-barrel silo was erected at the plant site to handle peak operations. It was found that cement pumping was a slower process of loading silos and required a larger storage capacity at the plant. Generally, only two silos were used during paving. Over a dozen 5-batch-capacity trucks were used to haul the dry mix to the pavers.

Personnel

H. A. Tost was the superintendent for Groves; John C. Crawford was the resident engineer for the New York State Department of Public Works.

THE END

NOVEMBER, 1960

ALL NEW... G-900 TRACDRIL!

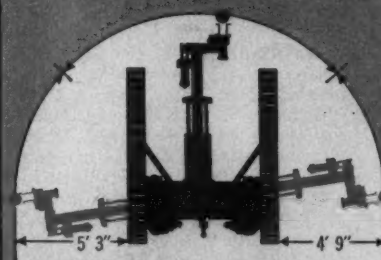
Unmatched versatility . . . drill boom is swung at right angles to tracks and drill carriage tilted inward for steeply sloped conditions.

The all new Chicago Pneumatic G-900 Tracdril is the culmination of 5 years of research and wide field experience. This self-propelled drilling unit is maneuverable, rugged and productive . . . a real "drillers drill." Extra large drilling radius because of its 180° horizontal boom swing and dual controls on turret and boom end for quick, accurate positioning of boom and drill carriage give the driller exceptional flexibility. With the sensational $4\frac{1}{2}$ " Deep Hole Drill, it quickly sinks 3" holes up to 75 feet.

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- Full 180° Ground Coverage . . . right or left. New G-900 drills true verticals at 90° angle to tracks.

- Reaches "way-up" for extra high horizontal breast holes . . . to 11 feet.
- Big 85° carriage swing compensates for steeply sloped conditions.
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Full specifications and details in Bulletin SP-3627

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Borrow pits, located above the section of Interstate 81 being brought to grade in upper New York State, allow scrapers to come out of the area headed downhill. This DW20 loads out an average of 18 loose yards of sand in 60 to 80 seconds.



A No. 12 motor grader spreads fill and maintains haul roads while a John Deere tractor pulls a rubber-tire compactor over the material.



Contractor takes advantage of topography in planning operations, assignments for

Fast-moving scraper job

A grading job regarded as one of the most difficult of a group of four on New York's Empire State Expressway is being well handled by a scraper spread, with shovels and wagons loading out material having high concentrations of rock and waste muck.

Arute Bros., Inc., New Britain, Conn., has the \$3.9 million contract, which runs from just south of Pierrepont Manor to Adams, N. Y. It involves 1.2 million yards of excavation, and construction of two river bridges, four grade crossings, a twin-barreled 10 x 10-foot box culvert, and the twin 24-foot blacktop roadways.

This part of Interstate 81, following a shallow valley containing a small stream and a mile-long stretch of woods and marshland, is in an area containing rocks up to man-high size and large pockets of sand and gravel. In the marshy area, more than 100,000 yards of unsuitable material had to be undercut; the material, containing high organic content and large boulders, was dozed aside to a depth of 2 to 3 feet by D8's, then loaded out by a 2½-yard shovel to Mack 10-yard trucks. In another section, some 30,000 yards of heavily consolidated rock had to be ripped with a D9 and loaded out to DW20's with Athey wagons.

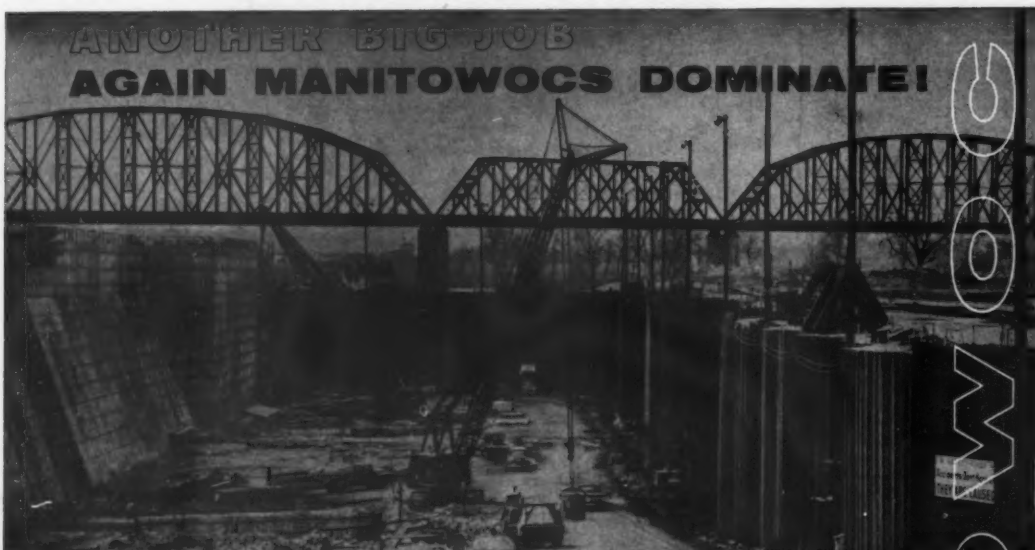
Mainly a scraper job

But the biggest load of work on this job is being done by the scraper spread. Nine DW20-456 tractor-scraper units, three S-18's, and seven DW20's with Athey wagons have kept the job moving since its start, despite wet weather. Whenever possible, scrapers work out of one or two pits, hauling fill to as many as three different areas.

Since borrow pits are generally equally spaced for the length of the job, the average haul ranges from 1,500 to 2,000 feet. In certain instances, however, haul distance reached up to 6,000 feet because some pits were deliberately bypassed to put more desirable material on the fills.

Of the 900,000 cubic yards of borrow involved in the job, about 300,000 yards is being taken out of one large pit of high-bearing sand at the north end of the job. Sand makes up about 60 per cent of the project's total excavation; the remainder is muck, rock, gravel, and dirt. In addition to the borrow, the work calls for excavation of 140,000 yards of select fill and 150,000 yards of gravel.

Borrow pits are located uphill from the road so that scrapers can be headed downhill when they have picked up their loads. Four D9's are being used as basic push-tractors; a power-shift D8 is added when scrapers are working two or more pits. One tractor is used for push-loading a scraper while the tractor waiting for the next scraper uses what might have been lost time to smooth out and maintain the cut.

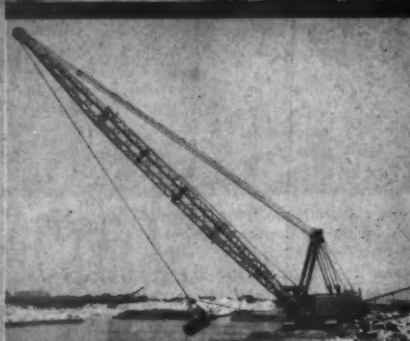


Two of the Hardaway Contracting Co. Model 3900 cranes at the Kentucky lock and dam site.

In Louisville, Ky. work has been progressing for over two years on reconstruction of Lock No. 41, just one phase of a billion dollar, long range Ohio River navigation and improvement program. Initial efforts on the complicated, \$19,300,000 Louisville job include the construction of four huge cofferdams.

General contractor is the Hardaway Contracting Co., Columbus, Ga. under supervision of the Louisville District, U. S. Corps of Engineers. The Hardaway Company has been using two Manitowoc Model 3900 cranes exclusively for the cofferdam construction, handling 13 ton templates and the 60 ft. steel sheet piling to form the coffer cells. The cranes also have been placing concrete for both guard and lock walls. An estimated 375,000 yds. of concrete will have been placed before the job is completed.

On another phase of the Louisville project, Traylor Bros., Inc., Evansville, Ind. has been using a Manitowoc Model 4500 Vicon dragline, equipped with a 147 ft. boom and a 5 yd. bucket, for widening and deepening a mile and a half of the upstream approach channel. The drag moves approximately 375 yds. of mud and rock per hour, widening the channel from 200 to 500 ft. An estimated 3,500,000 yds. of earth and 200,000 yds. of rock will have been removed when the job is finished in late winter of 1961.



Manitowoc 4500 Vicon dragline dredges 375 yds. of mud and rock per hour.

Commenting on the performance of the Vicon dragline, Mr. Ford Dyer, Project Manager for Traylor Bros., Inc., said, "We find that the Manitowoc maneuvers better than any other machine of comparable size and that it works 10 to 12 per cent faster." In addition to the dragline, Traylor Brothers have used two Model 3900 Manitowoc cranes at the job site.

On multi-million dollar jobs like this or everyday "bread and butter" jobs, Manitowocs are consistently the choice of contractors needing big output at the lowest possible cost. Be sure to call your Manitowoc distributor when you are ready to improve your equipment fleet.

Manitowoc

MANITOWOC ENGINEERING CORP.

(A subsidiary of The Manitowoc Company, Inc.)
Manitowoc, Wisconsin

SHOVELS
1½ to 6 YDS.

CRANES
25 to 125 TONS

DRAGLINES
1½ to 7 YDS.

TRENCH HOES
1½ to 3 YDS.

For more facts, use Request Card at page 18 and circle No. 295



Maintenance is a full-time job for the eight men of the service crew. They use a card system to keep track of the time when machines have to be pulled out of the line.



Two river bridges, four grade crossings, and a twin-barreled box culvert are included in the contract. This Bay City 25-ton truck crane is placing concrete for columns of one of the grade crossings.

Despite the tough loading characteristics of the sand, scrapers pick up an average of 18 loose yards of the material in 60 to 80 seconds. The disadvantage of using the 4-wheel tractors in sand is more than offset by the high speed of the DW20's on the haul. Compaction requirements of 90 per cent modified Proctor on the road and 100 per cent on the bridge approaches are easily obtained. Although rubber-tire compactors are used, the bulk of compaction is being achieved with a thorough watering by three water wagons constantly at work while the rubber-tire scrapers compact the material.

Maintenance

A full-time crew of eight, headed by equipment supervisor "Tink" Tinkham, are following Arute Bros. system of lubrication and preventive maintenance for the entire spread of equipment. Machines are pulled off the job as soon as their cards show it is time for maintenance work to be done.

In addition to the scrapers, the equipment lineup includes four D9's and sixteen D8's, four No. 12 and one No. 14 grader, a 2½-yard shovel, a 1½-yard 38-B, a Koehring 1½-yard rig, nine Mack 10-yard trucks, two Bay City 25-ton truck cranes, a P&H 30-ton crane with clamshell bucket, four 5-yard ready-mix trucks, a B-K paver, two 22-B shovels, a 175 Michigan and a 275 Michigan loader, three water wagons, a grease wagon, a fuel truck, and six tool trucks.

THE END

Atlas Copco acquires Swedish drilling firm

■ Atlas Copco A.B., manufacturer of air compressors and pneumatic equipment, has acquired the Swedish Diamond Rock Drilling Co.

Better known to many of its overseas associates as Craellus, the Swedish company specializes in core-drilling operations.

Atlas Copco sells its products in the United States through Atlas Copco Eastern, Paramus, N. J.; Atlas Copco Pacific, San Carlos, Calif.; and branch offices across the country. The international Atlas Copco organization has headquarters in Stockholm, Sweden.

Soil-cement construction subject of PCA films

■ The Portland Cement Association, Chicago, Ill., has released two new 16-mm sound and color motion pictures dealing with different aspects of soil-cement construction.

The use of soil-cement pavement in construction of highway shoulders is described in "Soil-Cement Shoulders for Modern Highways." This 10-minute film shows soil-cement shoulder practices in various parts of the country, both on the Interstate System and on primary highways. A sequence is included showing the reconstruction of a dangerously low highway shoulder.

"A County Builds Soil-Cement" tells

how one county solved its road maintenance problems through a planned program of soil-cement construction. Twenty minutes in length, it demonstrates soil-cement construction in a nontechnical manner, and describes the nature of this paving material and methods employed in using it. Examples of the growing use of soil-cement roads in many sections of the country are shown.

Both films are available on loan from PCA, 33 W. Grand Ave., Chicago 10, Ill., and through the association's 34 district offices, located in major cities of the U. S. and in Vancouver, B. C.



Project Superintendent, Jack Ryan, confers with Bridge Superintendent, T. Asack, whose vehicle is RCA 2-Way Radio equipped.

RCA 2-Way Radio Systems Help Campanella & Cardi to Beat Construction Deadlines!

—Integrate Construction and Concrete Operations

"We couldn't be without 2-Way Radio! You can't measure the value of RCA 2-Way Radio in our operation," says Julius Papitto, Equipment Manager, Campanella & Cardi, Hills-grove, R.I. "There are so many savings effected they're almost impossible to enumerate!"

With two separate yet integrated systems—one for construction operations, the other for concrete—RCA Radio lets this progressive contractor expedite men and machines better, get jobs done more efficiently and on time or ahead of schedule. The firm depends on radio to keep in constant and instant touch with plants, projects, repair cars, mixer trucks on the road and key personnel and vehicles in the field. Matching company growth, radio equipment consists of six base stations, 75 mobile units, and is still growing!

For construction and ready-mix operations, RCA "LD" (Low Drain) Radio will prove itself and pay for itself quickly out of savings. Ask your RCA representative; or for complete descriptive literature write RCA, Communications Division, Dept. N-277, Building 15-1, Camden, N.J.



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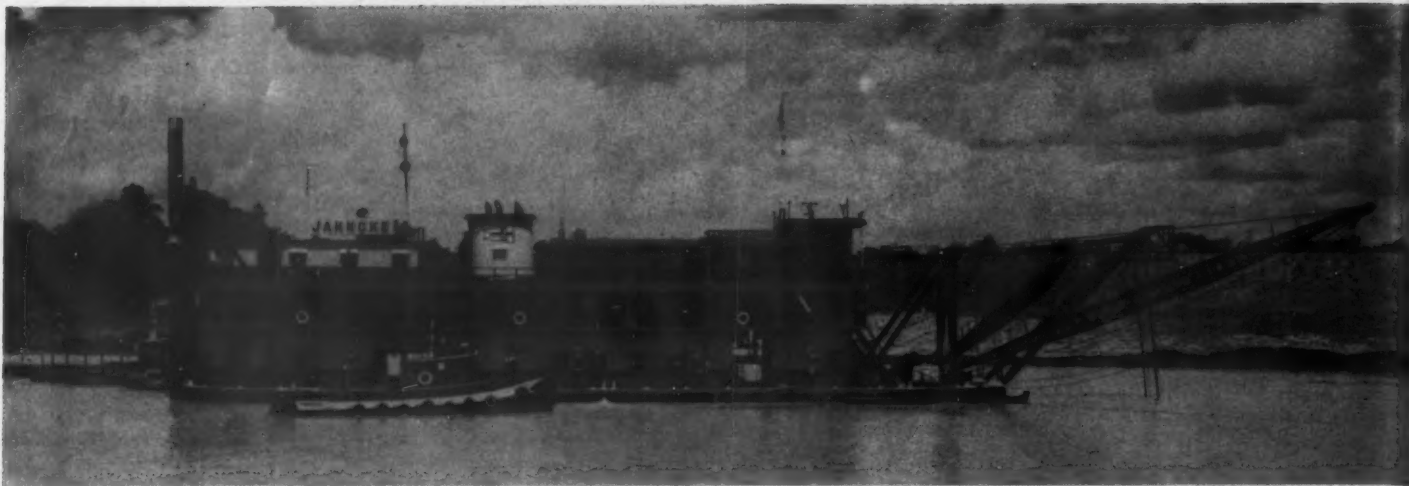
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Mixer is alerted by 2-way radio to speed delivery to project.



You get dependability and economy with the new RCA "LD" Transistorized 2-Way Radiol Standard transistors used in circuits where long experience proves their reliability, where they do the best job in cutting down on costly battery drain. Priced considerably below other transistorized 2-way radios, comparable in cost to conventional tube-type radios—the "LD" is today's best buy in 2-way radio.



The 24-inch cutterhead dredge Paul F. Jahncke is placing some 9½ million yards of fill for the 2-mile-long, 245-acre industrial development site that is part of

the Vicksburg Harbor Project. The dredge has an 85-foot ladder; 100-foot anchor booms on each side reach out to position anchors controlling the swing.

Tower excavator, dredge dominate harbor project

Contractors and Engineers staff article

For government cartographers, the Vicksburg Harbor Project will mean merely a few strokes of the pen on the master map just a shade north of Vicksburg, Miss.

For the U. S. Army Corps of Engineers, the harbor project will mean about four years of work, 13 million yards of dirt, and \$5 million of government green.

For business in Vicksburg, the development will mean a big change. It will give industry a 245-acre, 2-mile-long fill on which to locate and will provide the adjacent harbor with access to the Mississippi River. It will also provide rail and highway con-

nections to the factories on the fill.

All kinds of equipment—from a lowly belly-dump to a mighty dredge—have played a part in building the fill. In the early construction stages, trucks, bottom-dumps, draglines, dozers, and scrapers cleared the area and built the highway and railroad approach fills. A piece of equipment unfamiliar to most areas built a large share of the retaining dikes. Pulling a giant dragline bucket between two cranelike rigs, the tower excavator scraped up over a million yards of dirt. A powerful 24-inch dredge excavated the harbor channel as it built the 27-foot-high industrial fill. The harbor channel will have a minimum depth of 12 feet. Because of

river fluctuations, dredging was carried much deeper.

Construction of this fill, scheduled for completion by the end of 1960, is under the supervision of the Vicksburg District of the Corps. In the case of the dredging, the construction branch of the Corps is doing the work itself using a leased, fully manned dredge. Various other phases of the work have been awarded under private contract. Although most of the cost of the \$5 million project is borne by the federal government, Warren County is paying about \$400,000 for right-of-ways, utility alterations, and road relocations, together with an approach highway bridge.

Floods delay construction

Ford Construction Co., Dyersburg, Tenn., started construction in the fall of 1956. Its work included clearing and grubbing the harbor and approach-channel areas, clearing of all fill areas, construction of retaining dikes for the industrial fill, and the highway and railroad-approach fills. Rains and the floodwaters of the Mississippi severely delayed the work. Ford's contract of \$893,000 was not completed until November, 1959.

Tower excavator builds dikes

The Bucyrus-Erie tower excavator was particularly suited for building the south portion of the 27-foot-high impervious dikes that border the big

NEW POWER STEERING

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CONTRACTORS AND ENGINEERS



A Bucyrus-Erie tower excavator is effectively worked to build up the 27-foot impervious dike at the south. The tail tower, foreground, serves as a walking deadman as the tower excavator pulls the drag bucket to the fill; the tail tower brings it back. The rigs operate about 700 feet apart. A Cat D6 is clearing the path for the tail tower.

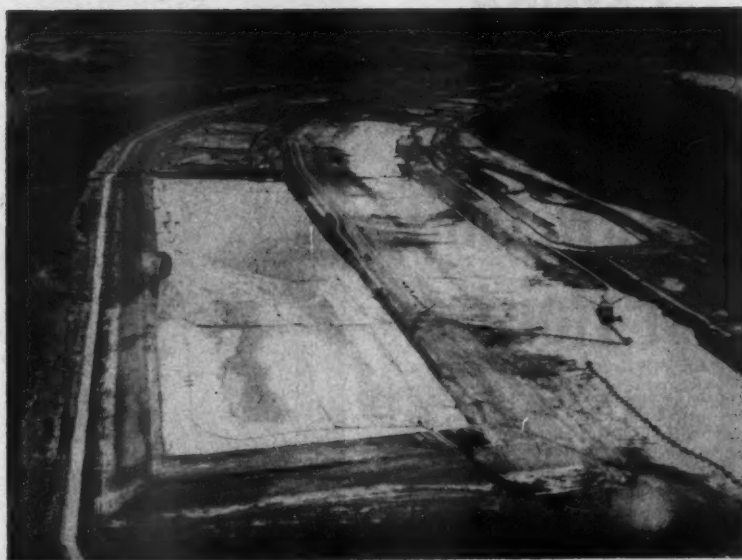
fill. Suitable material was available within the 600-foot reach of the rig.

A tower excavator resembles a crossing of a dragline and a Sauer-
man rig. It consists of a pair of crane-
like machines operating about 700
feet apart and connected by a double
cable line. The cable line pulls a
giant drag bucket that takes 14-yard
bites out of the area between the two
pieces of equipment. Both units move
under their own power on crawler
tracks.

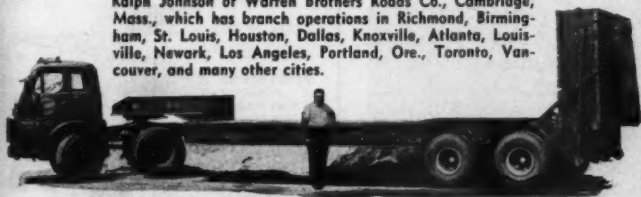
One of the rigs has a 110-foot vertical
boom or tower. Cables on this
tower pull the loaded bucket and
dump it in front of the machine. The
other rig, or tail tower, has a much

(Continued on next page)

Material is being pumped into
one of the three areas of the fill
by the dredge Paul F. Jahncke,
while in the distance the tower
excavator is at work.



New BIRMINGHAM Lowbed inspected by Dist. Supt.
Ralph Johnson of Warren Brothers Roads Co., Cambridge,
Mass., which has branch operations in Richmond, Birmingham,
St. Louis, Houston, Dallas, Knoxville, Atlanta, Louisville,
Newark, Los Angeles, Portland, Ore., Toronto, Vancouver,
and many other cities.



WARREN BROTHERS ROADS COMPANY likes BIRMINGHAM lowbeds

"One of our BIRMINGHAM Lowbeds has been in continuous service 14 years," states Mr. Johnson, "and it is one of the best investments we ever made. It still is good for many more years' service."

The new BIRMINGHAM Lowbed shown above is a 40-ton trailer with hydraulic ramps which provide easy loading and hauling of pavers from job to job. Warren Brothers is a national organization which builds streets, highways, airfields, etc., specializing in asphalt paving.

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easy to take to the job. Invaluable
as emergency standby service

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"Contractor's
Special"

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GB-318-S
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FURNISHES 110/220 VOLT AC POWER
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wheels, rheostat knob and two bus bar type weld-
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☐ Model SP-418-W

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For more facts, use coupon or Request Card at page 18 and circle No. 301



Working from the top of the borrow-pit bank, a Link-Belt Speeder dragline loads bottom-dump Euclids that carry the material to the approach fill. Rail and highway connections will be provided for industry locating in the new area.



The largest of the three flumes to relieve the fill of discharge water is this 28-foot-high 2-gated wood structure. It is founded on timber piles and carries between 47 and 57 cubic feet of water per second.

Again Coffing Brings You a New Line of Hoists

For the second time in less than a year Coffing has introduced a new hoist line to give you easy, safe, positive efficient lifting power at moderate cost.

The new RA Series Safety Pull Aluminum Ratchet and Pawl Lever Hoist is easy to operate—requires minimum handle pull—only 59 pounds for the 3/4-ton model to 97 pounds for the 6-ton model. It may be operated from either side and the design prevents freezing a load. Load rotation is easy because of ball thrust bearings in the load hook assembly.

Safety has been built into the hoist. It will not ratchet under load if handle is released nor will it free chain. Controls are protected from inadvertent shifting. The bottom stop eliminates any hazard from the handle being released unintentionally and prevents handle from being moved to a position parallel to the load chain which would develop undesirable twisting action. The exclusive safety handle bends to indicated overload.

Strength without excess weight in the new hoist is achieved by a special aluminum alloy which is used in the body and handle. Long service life has been provided by the high tensile material in the chain retaining guide, heat treated load sheave and the plated, high tensile, heat treated alloy steel link chain. Maintenance is held to a minimum by the rugged construction and simplicity of design.

The new Coffing RA Series Safety Pull Aluminum Ratchet and Pawl Lever Hoist is available in six models with capacities from 3/4 to 6 tons. Ask your distributor or write for Bulletin ADH-86.



COFFING HOISTS

DUFF-NORTON COMPANY

Four Gateway Center • Pittsburgh 22, Pa.

COFFING HOISTS

Ratchet Lever • Air
Hand Chain • Electric



DUFF-NORTON JACKS

Ratchet • Screw
Hydraulic • Worm Gear

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(Continued from preceding page)

shorter boom. This rig acts as an anchor for the cable system and also pulls the empty bucket back into position.

Cross dikes control discharge

In addition to the bordering dikes, two lower-level dikes were built across the width of the fill. These dikes, approximately 12 feet high, divided the fill area into three equal sections. Each section was then filled with dredged material up to the height of the cross dike. On the top lift that carried the fill up to about 27 feet, no cross dikes were necessary. Three wood sluiceways, one for each section, were built in the dikes to drain the discharge.

Since the area was formerly the bed of the Mississippi River, sand for the fill was plentiful. The fine granular material was dredged out of the harbor area as well as neighboring borrow areas. On only one small section of the fill was it necessary to use clay.

3,700 horses for hire

One of the best-equipped dredges in the Mississippi River area was leased by the Corps to place the 9 1/2 million yards of material. Owned by Jahneke Service, Inc., New Orleans, the 24-inch dredge Paul F. Jahneke was built in 1957 by the Ellicott Machine Corp. Its pump is powered by a Cooper-Bessemer 3,700-hp diesel engine. Its 85-foot ladder makes possible dredging in 60-foot depths. Its two 100-foot anchor booms allow convenient placing of anchors for the swing lines. The big Florida-type cutter-head is driven by two constant-torque induction motors.

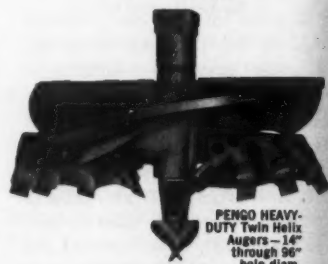
The crew of up to 72 men can sleep in comfort in air-conditioned quarters. On their off-duty hours, they can pass the time watching television in one of the recreation rooms. On this up-to-date dredge, the crew sleeps well, eats well, and then works hard.

Dredging goes smoothly

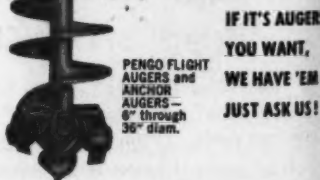
In general, the dredging proceeded smoothly, with little loss in operating time. Production averaged about 1,100 cubic yards per pumping hour.

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For more facts, circle No. 303

CONTRACTORS AND ENGINEERS



A Cooper-Bessemer 12-cylinder 3,700-hp diesel engine powers the 80-inch 4-vein impeller of the Paul F. Jahncke's Ellicott pump.



A welder hardfaces the blades of the cutterhead and strengthens spots weakened by heavy use. The dredge was leased by the Corps from Jahncke Service, Inc., New Orleans, for this job.



At a Y in the discharge line, workmen open a hydraulically controlled gate and close the other to switch pumping to another line.

The lift to the fill varied from 30 to 60 feet. For the use of the dredge and operating personnel, the Corps of Engineers paid Jahncke \$207 per working hour.

The land line stemmed out into three separate branches to distribute the sand across the 1,000-foot width of the fill. One branch ran down the center of the fill, the second ran down the fill about 150 feet from the north dike, the third was placed about 150 feet from the south dike. Only one branch carried material at any one time. A Y-connection at each branch was opened and closed by two gate valves operated by hydraulic cylinders. When the flow was being changed from branch to branch, one valve was slowly closed while the other was slowly opened. No equipment was used to distribute the sand on the fill. The slightly waved surface will be leveled under a future contract.

Unusual drainage system

Since the fill is surrounded by impervious dikes, some means must be provided to permit internal drainage water to get out of the fill. A unique system of metal drain pipes takes care of the problem. Each drain is in the shape of a T. The crossbar of the T is a 50-foot perforated 6-inch corrugated metal pipe lying along the inside toe of the dike. It serves to collect the drainage water. The vertical member of the T penetrates the base of the dike. This 6-inch pipe carries the water outside of the fill. To facilitate the drainage, the perforated collection pipe is surrounded by a specially graded bed of gravel. A total of 41 drains, set at about 500-foot intervals around the lower edge of the fill, serves as a permanent internal drainage system.

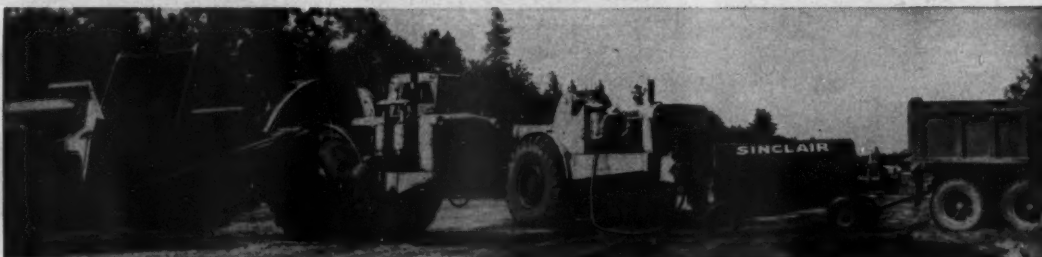
Field personnel

For the Vicksburg District of the Corps of Engineers, the resident engineer is Paul W. Pierce, Jr. Directing the dredging operation for the Corps is superintendent of construction Charles W. Lusk. Joseph L. Boudreaux is captain of the dredge. The superintendent for Ford Construction Co. was Harold H. Hanna.

THE END



When this photograph was taken, 8,000 yards of right-of-way had been cleared of trees, and the roadbed was being prepared for surfacing.



Mr. Hanna reports, "The portable trailer tanks Sinclair loaned to us contributed greatly to the speed and efficiency on our section. We were able to refuel on the job . . . fast, and keep our equipment working full time."

For more facts, use Request Card at page 18 and circle No. 304

"Sinclair Helped Cut Maintenance Costs On Every Mile of Our Northway Section"

says J. Hanna, Superintendent,
D. A. Collins Construction Company

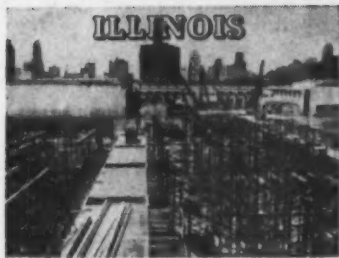
The Northway, another link in the nation's grid of superhighways, connects the New York State Thruway with the Canadian border. Mr. Hanna says, "Our heavy-duty equipment took the toughest kind of punishment on this project. Work ranged from ripping out trees to building bridges. Yet our maintenance costs were far below what we anticipated. Much of the credit must go to Sinclair's service and their high quality fuels and lubricants. They kept our equipment operating at peak efficiency . . . on schedule. These are reasons enough why we use Sinclair Products exclusively."

If you haven't discovered the cost-cutting possibilities of Sinclair services and products, see your local Sinclair Supplier — or write Sinclair Refining Company, Contractor Sales Dept., 600 Fifth Avenue, New York 20, N. Y.

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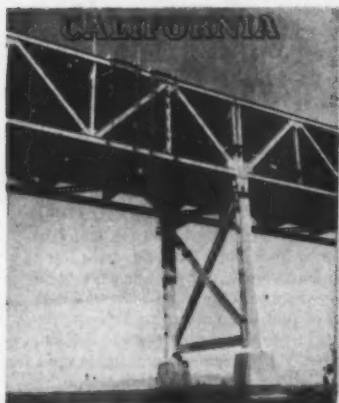
MINNESOTA
SHORING
(M. J. McGough Co.)



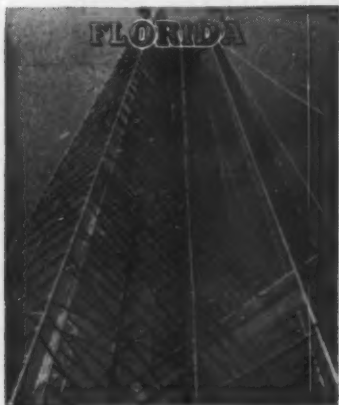
COLORADO
SHORING
(A. S. Horner Const. Co.)



PENNSYLVANIA
BUILDING REPAIR
(M. J. Kulzer & Sons)



CALIFORNIA
MAINTENANCE SCAFFOLD
(State of California)



FLORIDA
PERMANENT TOWER
(Southern Bell Tel. Co.)



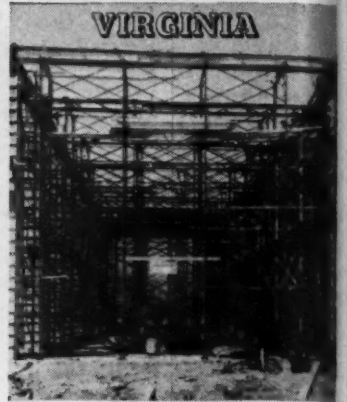
INDIANA
MASONRY
(Hagerman Const. Co.)



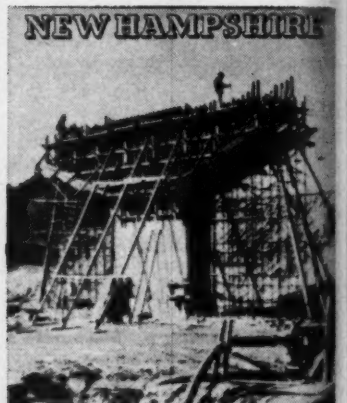
NEW YORK
INTERIOR DECORATING
(N. Coplio & Sons Co.)



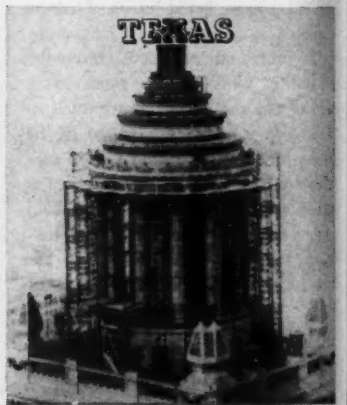
OHIO
SHORING
(Gust K. Newberg Const. Co.)



VIRGINIA
SHORING
(Thorington Const. Co.)



NEW HAMPSHIRE
SHORING
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TEXAS
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NOVEM

Convention Calendar

November 1-4 American Institute of Steel Construction

Annual convention, Greenbrier Hotel, White Sulphur Springs, W. Va. AISC, 101 Park Ave., New York 17, N. Y.

November 3-4 National Slag Assn.

Annual meeting, Hotel Mayflower, Washington, D. C. NSA, 613 Perpetual Bldg., Washington 4, D. C.

November 14-15 Prestressed Concrete Conference

Meeting, sponsored by the University of California Extension and Department of Engineering, Biltmore Hotel, Los Angeles, Calif. Dept. of Conferences, University Extension, University of California, Berkeley 4, Calif.

November 14-16 National Association of Corrosion Engineers

Canadian Region (Eastern meeting), Sheraton Mount Royal Hotel, Montreal, Que., Canada. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

November 14-17 American Bridge, Tunnel and Turnpike Association

Meeting, Atlantic-Sheraton Hotel, New York, N. Y. J. Allyn Stearns, executive secretary, Northcourt Bldg., White Plains, N. Y.

November 14-18 Short Course on Concrete and Concrete Aggregates

Course, sponsored by National Sand and Gravel Association and National Ready Mixed Concrete Association, University of Maryland, College Park, Md. NSGA-NRMCA, 1411 K St. N. W., 10th Floor, Washington 5, D. C.

November 21-22 New York, New Jersey and New England States Testing Engineers Association

Annual meeting, Statler Hilton Hotel, Boston, Mass.

November 21-22 Prestressed Concrete Conference

Meeting, sponsored by the University of California Extension and Department of Engineering, Sheraton-Palace Hotel, San Francisco, Calif. Department of Conferences, University Extension, University of California, Berkeley 4, Calif.

November 27-December 2 American Society of Mechanical Engineers

Winter annual meeting, Statler Hilton Hotel, New York, N. Y. L. S. Dennegar, ASME, 29 W. 39th St., New York 18.

November 28-December 2 American Association of State Highway Officials

Meeting, Sheraton-Cadillac Hotel, Detroit, Mich. Michigan State Highway Department, Lansing 26, Station A, Mich.

December 5-7 Associated General Contractors of America

New York State Chapter 35th annual meeting and exhibition, Concord Hotel, Kamesha Lake, N. Y. Louis G. Blackhall, managing director, AGC, Manger De Witt Clinton Hotel, Albany, N. Y.

January 9-13 Highway Research Board

Annual meeting, Sheraton Park Hotel, Washington, D. C. Fred Burggraf, director, HRB, 2101 Constitution Ave., Washington 25, D. C.

January 16-18 Conference for Land and Construction Surveyors

Conference, Pennsylvania State University, University Park, Pa. Continuing Education Conference Center, Pennsylvania State University, University Park, Pa.

January 17-19 National Limestone Institute

Annual convention, Statler Hilton Hotel, Washington, D. C. Robert M. Koch, president, NLI, 210 H St. N.W., Washington, D. C.

January 18-20 National Concrete Contractors Association

Annual convention, Diplomat Hotel, Hollywood, Fla.

January 21 National Ready Mixed Concrete Association

Annual meeting, Exhibit Division, Americana Hotel, Miami Beach, Fla. V. P. Ahern, secretary, NRMCA, 1411 K St. N.W., Washington, D. C.

NOVEMBER, 1960

January 23-26 National Sand and Gravel Association and National Ready Mixed Concrete Association

Forty-fifth NSGA annual convention, 31st NRMCA annual convention. Americana Hotel, Miami Beach, Fla.

January 23-26 Plant Maintenance and Engineering Show and Conference

Exhibit, International Amphitheater, Chicago, Ill. Clapp & Poliak, 341 Madison Ave., New York 17, N. Y.

January 25-27 New York State Highway Superintendents Association

Winter meeting, Sheraton-Ten Eyk Hotel, Albany, N. Y. H. R. Madison, secretary, NYSHSA, 1420 Western Ave., Albany, N. Y.

WRI handbook describes airport pavement design

■ The Wire Reinforcement Institute, Washington, D. C., has published "Design of Concrete Pavements for Airports." This 96-page illustrated hand-

book provides airport designers with descriptive information, data, tables, and criteria for the design of reinforced portland-cement concrete pavement for airports handling all types of planes.

The following major topics are discussed: basic factors in design; concrete-pavement design fundamentals; subgrade, subbase, and drainage; pavement thickness; reinforcement design; construction practices; concrete overlays; advantages of reinforcement; and welded-wire fabric data.

Sketches show typical layouts of runways, intersections, reinforcement and joint details. Photographs show construction jobs at leading U. S. airports.

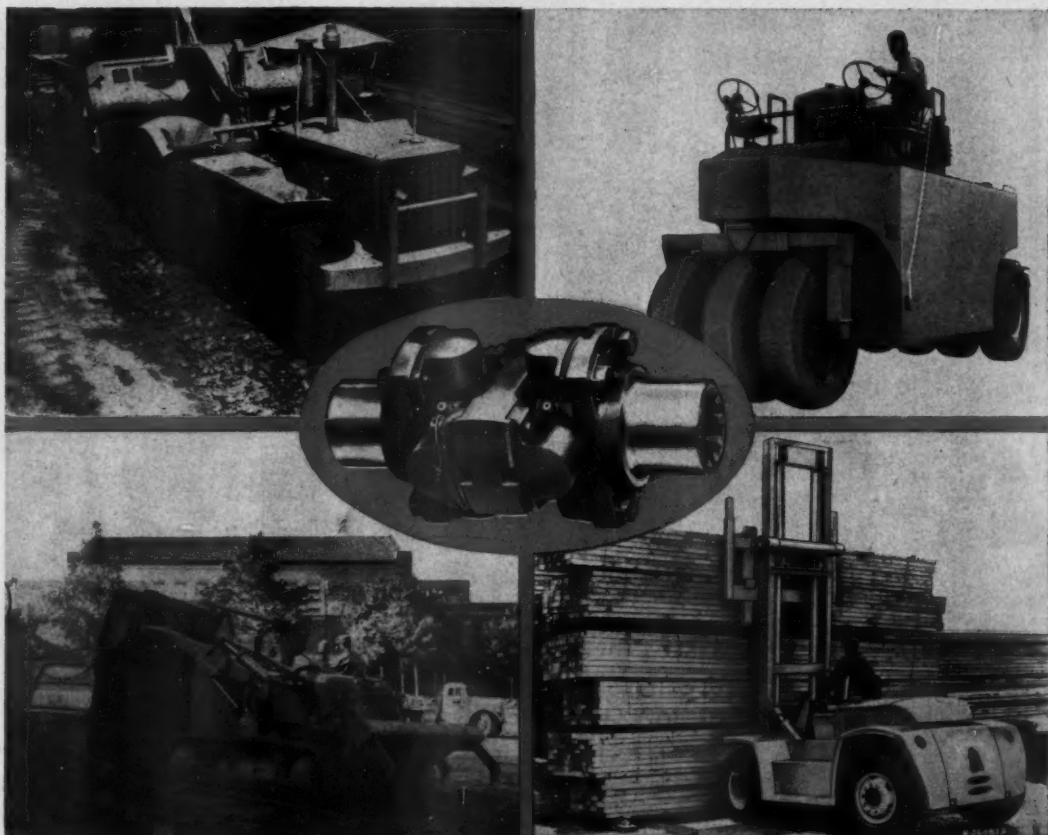
The book is available without

charge to persons requesting it on their organization's letterhead. Requests should be addressed to Wire Reinforcement Institute, Dept. AP-11, 1049 National Press Bldg., Washington 4, D. C.

Free booklet has rules on lightning protection

■ The new edition of "Lightning Facts and Figures" can be obtained without charge from the Lightning Protection Institute, 53 W. Jackson Blvd., Chicago 4, Ill.

This illustrated booklet discusses how and when lightning may strike and how to protect your life and property. Chapters cover such areas as the properties and dimensions of lightning, typical targets, etc.



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For more facts, use Request Card at page 18 and circle No. 305

Epoxy welds concrete, seals bridge floor



**First application fills cracks in bridge floor;
deck is sealed with another epoxy and garnet chips**

Three simple steps—chipping, cleaning, and epoxy application—take care of sealing cracks in the reinforced-concrete deck of the Blue Creek Bridge near Coeur d'Alene, Idaho. The workman with the air hose cleans out cracks; an Ingersoll-Rand Gyro-Flo 125-cfm compressor on the truck supplies air. At left, a crew member uses a hammer to dislodge loose particles and help open cracks.

Contractors and Engineers staff article

Epoxy sealing compounds welded the cracks in the concrete deck of an Idaho highway bridge and sealed the surface against future moisture penetration in a 2-stage operation. The work was done by the Building Restoration Co., Spokane, Wash., under a \$16,000 contract with the Idaho Department of Highways.

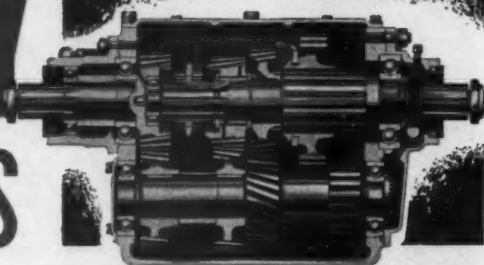
The Blue Creek Bridge was built in 1948 over an arm of Coeur d'Alene Lake on U. S. 10 a few miles east of Coeur d'Alene, Idaho. It is a steel structure with a reinforced-concrete deck slab.

The bridge had developed numerous transverse cracks, which ranged from hairlines to openings $\frac{1}{8}$ inch wide or more. Cores cut from the deck showed that the cracks generally occurred over the transverse reinforcing bars. The cores also indicated that these bars had as little as $\frac{3}{4}$ inch of concrete covering them. Obviously, corrective measures were necessary if the deck was to be preserved.

Sealing the cracks with asphaltic or other types of fillers had been con-

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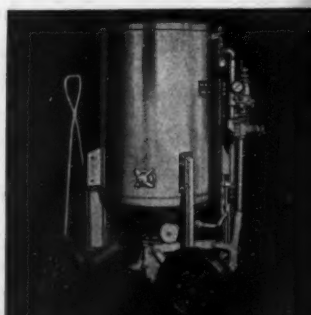
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For more facts, use Request Card at page 18 and circle No. 307



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For more facts, circle No. 308

CONTRACTORS AND ENGINEERS

The Epocast No. 530 is supplied in two cans and mixed in the larger one; the small can is on the tail gate. The mixture, with a pot life of about an hour, is then poured into a plastic mustard bottle for application.



Two workmen using plastic mustard bottles applied the liquid Epocast to the cracks. These plastic bottles worked well. The spouts can be conveniently trimmed to produce any desired size of opening. Since the epoxy does not adhere to the polyethylene bottles, any surplus that hardens in them can be easily cleaned out.

Clean deck with acid

With the larger cracks sealed (specifications required sealing cracks over 1/16 inch, but the contractor sealed many smaller ones), the next step was a thorough cleaning of the surface of

the concrete deck with muriatic acid. The acid was poured on the deck, brushed in with street brooms, and flushed off with water. This removed all grease and dirt prior to application of the seal coat. The two components of the Guardkote 140 compound were measured out from barrels carried on the back of a truck and mixed in a 5-gallon can with the aid of a paint-mixing device powered by an electric drill motor. The mixture was then spread on the deck from buckets and applied over the roadway surface with rubber squeegees and brooms.

The specifications required the application of 2 pounds of the epoxy

sidered in the past, but it was felt that these were not the answer to the problem. The recent availability of the epoxy compounds with their remarkable adhesive properties suggested the solution.

Penetrates small cracks

Under this contract, the cracks were first filled with Epocast No. 530 supplied by Furane Products, Inc., Los Angeles. Then the entire deck was coated with Guardkote 140, a material developed by the Shell Chemical Co. and produced under license by Furane. Fine garnet chips were spread over the seal coat to provide skid resistance.

In the liquid state, the epoxy compounds have a very low surface tension that permits them to penetrate very small openings. The Epocast No. 530 easily penetrates openings that will completely resist water. This means that the epoxy penetrates deep into even the finest cracks.

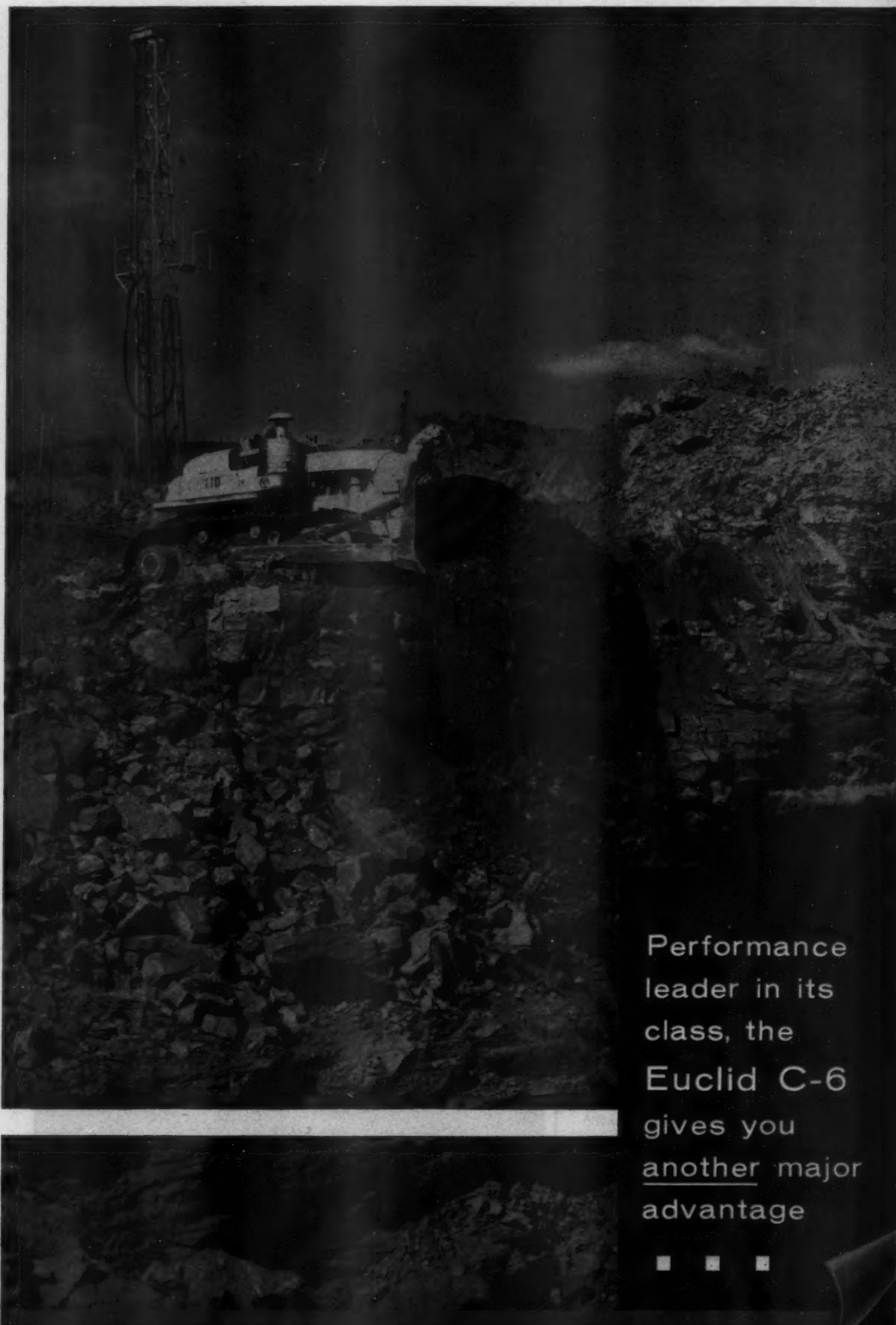
This material is much more than a filler. It develops a tensile strength well in excess of the concrete's and actually welds the cracked surfaces together. Tests repeatedly prove that broken concrete test beams welded together with epoxy compounds will fall at some point other than the original break.

The Epocast No. 530 used on this job was delivered in two preproportioned cans. One was about gallon size, and the other held about a pint. The two liquids were thoroughly mixed in the larger can immediately before placing. The mixture had a pot life of about an hour, a setting time of approximately three hours, and a curing time of seven days at a temperature of 70 degrees F.

The Guardkote 140 material for the seal coat was mixed in larger quantities in a small Muller concrete mixer. The resulting mix had properties similar to those of the crack filler.

Fill cracks by hand

Cleaning out the cracks with an air jet was the first step of the operation. While highway department flagging crews maintained one-way traffic on half the deck, the contractor cleaned and filled the cracks on the other half. An Ingersoll-Rand Gyro-Flo 125-cfm compressor that was mounted on a truck supplied the air for the cleaning.



Performance leader in its class, the Euclid C-6 gives you another major advantage





The epoxy mixture is easily applied. Since the Epocast has a low surface tension, it penetrates cracks that will not take water. The material actually provides a bond that is greater than the strength of the concrete. The epoxy material for the seal coat is mixed in a small concrete mixer and applied with squeegees and brooms.

(Continued from preceding page)

sealer to a square yard of surface. Known weights of material were applied to measured areas; the application was repeated, if necessary, to leave the required amount of material.

Garnet chips, supplied by the Idaho Garnet & Abrasives Co., Fernwood, Idaho, were spread over the surface by hand and swept out by hand. The garnet was supplied in 100-pound sacks and was applied at the rate of 20 pounds per square yard within 10 minutes of the time the epoxy was applied. The excess chips were swept up the next day. This completed the job; there was no rolling, no further sweeping, no later cleanup of excess chips. The contractor salvaged all excess chips and screened them through a No. 10 mesh for re-use.

Personnel

The job was supervised for the Building Restoration Co. by the owner, W. D. Pomeroy. On hand as technical advisor was A. J. "Art" Dube, supervisor for the Products Division of Safeway Scaffold, Inc., Spokane, the supplier of the epoxy materials.

The project chief for the Idaho Department of Highways on the job was J. O. "Jim" LePard. The work was done under the supervision of the Coeur d'Alene District, for which John F. Pearring is district engineer.

THE END

New ACI bibliography

■ "Fatigue of Concrete," third in a new series of bibliographies published by the American Concrete Institute, lists and annotates 114 important works on the fatigue of plain and reinforced concrete.

This comprehensive bibliography covers a wide range of concrete fatigue tests. Titles include studies made in compressive and flexural fatigue loading and the resistance of bond of fatigue loading. Annotations summarize results of tests described in the references.

Requests for copies, priced at \$2.50, should be addressed to P. O. Box 4754, Redford Station, Detroit 19, Mich.

Management

by GEORGE E. DEATHERAGE, P. E.
construction consultant

Contractors' license laws

Almost all states and cities now require a contractor or his responsible managing employee—superintendent or project manager—to have a license. And in a few years, every person in responsible charge of work will be required to pass an examination for a license.

Managing employees currently holding licenses have a better chance

of being hired, for many contractors are not licensed and depend on their superintendents or project managers to give the business legal standing.

Some states have separate examinations for contractors and superintendents; others have the same examination for both. It is generally best to take the contractor's examination—when two kinds are given by a

state; this puts you in a position to pass the examination for superintendents.

While contractors' license laws vary, those of the state of California can serve as being typical of the laws throughout the country.

Administration

The Contractors' State License Board of California, consisting of seven members appointed by the governor, is in the Department of Pro-

Savings in engine costs alone make the "Euc" C-6 today's best tractor buy

In the Euclid C-6 you get the advantages of job proved power train components... the reliability of the GM 6-71 engine, Allison Torqmatic Drive and Euclid's famous planetary drive... that help keep downtime to a minimum. You get designed-in service accessibility that's unsurpassed by any competitive crawler... servicing or complete removal and replacement time is well below that required for comparable tractors.

You get a big advantage, too, in the lower cost of engine replacement parts... savings that cut your maintenance expense to the absolute minimum. For example, pistons and rings for two competitive engines are 79% and 163% higher in cost than for the GM engine; a water pump 255% and 257% more; up to 120% more in replacement of complete engine from fan to flywheel.

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Have your dealer give you all the facts and figures on the C-6... you'll find that production and maintenance cost this "Euc" gives you a better return on investment.

Professional and Vocational Standards. All members of the board are contractors with five years of business behind them at the time of their appointment, and they must remain in the business during their term of office. One member of the board is a general engineering contractor, three are general building contractors, and three are specialty contractors. The board, by and with the approval of the director, appoints a registrar of contractors at an annual salary. The registrar is the executive secretary of the board and carries out assigned administrative duties, plus duties delegated to him by the board. For

administration purposes, a deputy registrar, a chief reviewing and hearing officer, and other necessary assistants may be appointed. The registrar, with the approval of board and director, cooperates in the enforcement of government legislation relating to the construction industry. The board, however, may review any action or decision of the registrar, sustaining it or reversing it by a majority vote. California law requires any person engaging in contracting to have a license. And licensed persons cannot jointly submit a bid; they must secure an additional license to work

This is the sixtieth of a series of articles on Construction Management by George E. Deatherage, P. E., The National Schools of Construction, Satsuma, Fla. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by George E. Deatherage & Son, Construction Consultants, Satsuma, Fla.

as a joint venture. Moreover, the law requires proof of license before a contractor can initiate court action concerning a job. There are exceptions to the licensing law. It does not apply to authorized representatives of federal, state, county, or city governments, irrigation or reclamation districts, or other municipal or political corpora-

tions or subdivisions of the state. It does not apply to officers of a court acting within the scope of their office, public utilities handling construction incidental to their businesses, or owners or lessees involved in finding or producing petroleum or gas. It does not apply to property owners who are improving their structures and have no intention of selling before the work is completed.

The law also does not apply to work being done on federal land, or work valued at less than \$100. This exemption, however, cannot be held by a person who advertises, or who hangs out a shingle that might indicate he is a contractor or is qualified to engage in contracting. Also exempted are operations incidental to the construction and repair of irrigation or drainage ditches of irrigation districts or land in rural districts. The law also does not apply to an owner who contracts for a project with a licensed contractor; a licensed architect or registered civil or professional engineer working in his professional capacity; a person who furnishes materials or supplies without actually doing a contractor's work; or a contractor's employee.

Contracting is classified into three branches; general engineering contracting, general building contracting, and specialty contracting. The registrar can adopt rules to classify contractors and can limit the field and scope of their operations. However, a licensee can apply in more than one classification if he meets the qualifications prescribed by the board. There is no additional license fee.

Licensing

Under regulations adopted by the board, the registrar can investigate, classify, and qualify applicants for contractors' licenses by written or oral examination, or both. No license is issued to a minor, or to any partnership that has a minor as a member, unless the minor has a guardian appointed by a court.

To obtain an original license, a person makes an application on a prescribed form and accompanies it with the required fee. Information contained in the application includes a complete statement of the general nature of the contracting business, a statement of the classification requested, the name and address of the applicant, and other information deemed necessary by the registrar.

As far as experience is concerned, the individual may qualify by personal appearance or by the appearance of a responsible managing employee. Contracting organizations must send a responsible managing officer or member of the firm.

If anyone, after being qualified by examination of his experience and knowledge, ceases to be connected with the contractor, the firm has to

C-6 service accessibility cuts replacement labor costs, too!

Assuming good shop conditions and experienced personnel, these are typical times for removal and replacement of components in the C-6 and other torque converter tractors of the same class:

Component	C-6	Others
Radiator	3	10
Engine	8	16
Clutch	8	16
Drive Sprocket	3*	9.8**
Track Frame	3*	8**

*requires 70 ton press only
**requires special tools and 100 ton press

HOURS SAVED IN THE SHOP MEAN MORE WORK-TIME ON THE JOB!



EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

For more facts, use Request Card at page 18 and circle No. 309

management

(Continued from preceding page)

notify the registrar within 10 days. If such a notice is given, the license remains in force for a reasonable length of time. The same 10-day notice is required if a firm employs someone who has had a license denied, revoked, or suspended, or employs someone who had been associated with a contracting organization which has had a license denied, revoked, or suspended.

If no notice is given within the 10-day period, the license is suspended. The license is reinstated after the licensee or a member of the firm files an affidavit with the regis-

trar to the effect that a licensed person has been retained for the position.

Applicants for a license must show good character; dishonesty, fraud, conviction of a felony are all reasons for having a license denied. If a person's license has been suspended, and he applies for a license, the board may require a bond issued by a surety insurer before issuing a new license or removing suspension. The sum is not less than \$250 or more than \$1,000.

Records

The registrar maintains in his office an indexed record of all applications, licenses issued and renewed, and all revocations, cancellations, and suspensions of licenses. Whenever

funds are available, the registrar publishes a list of the names and addresses of contractors, and licenses issued, suspended, or revoked. Such a list is available to public-works and building departments, public officials, and others interested in the construction industry.

On receipt of a complaint in writing, the registrar may investigate any contractor within the state, and may suspend or revoke a license if the contractor is guilty of any act calling for disciplinary action. Any accusations have to be filed within two years of any alleged violation.

There are a number of causes for disciplinary action, including abandonment of a project, diversion of funds from a job, departure from or disregard of plans and specifications

without the consent of an authorized person, and violation of state building laws. Misrepresentation of a material fact in obtaining a license, knowingly entering into a contract with an unlicensed contractor, and failure to pay for materials and services are some other causes.

Insurance reports

Every person licensed as a contractor has to report, in writing, the name and address of the insurer carrying workmen's compensation insurance on his employees. This is done within 10 days after any policy is issued, and a report is sent to the insurer. The insurer, including the state compensation insurance fund, reports any cancellation or lapse of the policy to the registrar within a 10-day period. Any licensee who violates this requirement is guilty of a misdemeanor.

Experience requirements

Every applicant for a contractor's license must have had, within the 10 years preceding the filing of the application, not less than four years' experience as a journeyman, foreman, supervising employee, or contractor in the particular class of work that the applicant intends to handle. Acceptable technical training in an accredited school is counted as experience, but in no case does this training count for more than three years' experience.

Anyone granted a license is put into one or more classifications or subclassifications set up under the Business and Professions Code. The classifications for specialty contractors, for instance, cover a broad range. They include work on cement and concrete, insulation, ornamental metals, roofing, plastering, reinforcing steel, structural steel, air conditioning, welding, and plumbing. These, and many more types of work, are clearly defined by the board and limit the scope of work that can be undertaken by a licensee. However, persons may be licensed in more than one of the classifications, in which case they are listed as having "primary" and "supplemental" classifications.

This classifying of operations imposes uniform rules on licensees in the same classifications. A general building contractor, for instance, cannot take a prime contract unless it requires more than two unrelated building trades or crafts, or unless he has qualified for the particular specialty classification or classifications established by the board. A specialty contractor cannot act in the capacity of a contractor on any other work.

Licensing, in effect, works to protect the contractor, his employees, the owner, and others concerned with a project. Since the individual state handles licensing procedures and sets up certain regulations concerning them, anyone interested in securing a license or in having more information about the requirements should consult the laws of the state in which he works.

(Next month's article will deal with "Mechanics' lien law.")

In 40 States, Contractors Have Installed Armco Corrugated Metal Drainage Structures Under 138 New Limited-Access Highways

Armco Corrugated Metal Drainage Structures meet all requirements of modern superhighways, just as they have been doing for highways and roads all over the country for the past 50 years. Armco Drainage Structures are economical and easy to install, too.

For information on these highway drainage products, just write Armco Drainage & Metal Products, Inc., 4310 Curtis Street, Middletown, Ohio.

New steels are
born at
Armco



ALABAMA
Interstate 20 (Birmingham to Pell City)
Interstate 59 (Fort Payne to Georgia State Line)
Interstate 65 (Almore to Evergreen)

ARIZONA
Interstate 40
Interstate 55

CALIFORNIA
Golden State Freeway (Los Angeles to Bakersfield)
Interstate 5 (San Francisco to Reno)
Interstate 15 (Los Angeles to Las Vegas)
Interstate 80 (San Francisco to Reno)
Nimitz Freeway (Oakland to San Jose)
San Bernardino Freeway (Los Angeles to San Bernardino)
San Diego Freeway (Los Angeles to San Diego)
U. S. 50 (Oakland to Carson City)
U. S. 101 (Los Angeles to San Francisco)

COLORADO
Denver-Boulder Turnpike
Interstate 25 (Pueblo to Denver; Denver North; Trinidad)
Interstate 70 (Idaho Springs)
Interstate 805 (Fort Morgan-Brush; Denver to Barr Lake)
Valley Highway (Denver)

CONNECTICUT
Connecticut Turnpike (Interstate 95)
Interstate 84 (New York-Conn. Line in Danbury, East to Hartford)
Interstate 91 (Hartford to Mass. Line at Longmeadow)

FLORIDA
Sunshine State Parkway

GEORGIA
Interstate 75 (Adel to Ashburn)
Interstate 85 (Fulton County)
U. S. 41 (Atlanta to Cartersville; Atlanta to Griffin)

IDAHO
Interstate 15 (Monida to Humphrey; Hamer to Roberts; Blackfoot to Pocatello)
Interstate 80N (American Falls to Pocatello; Mountain Home to Boise; Payette to Caldwell)

ILLINOIS
Congress Expressway (Interstate 90)
Edens Expressway (Interstate 94)
Illinois Toll Road
Interstate 55
Interstate 57
Interstate 80
Interstate 255 & 270
Northwest Expressway & Calumet Skyway (Interstate 94)
Tri-State Toll Road (Interstate 294)

INDIANA
Indiana Toll Road (Interstate 80 and 90)
Interstate 65
Interstate 70
Interstate 74
Interstate 465
Tri-State Highway (Interstate 94)

IOWA
Interstate 29
Interstate 25
Interstate 80 (Davenport to Council Bluffs)

KANSAS
Kansas Turnpike (Interstate 35; Interstate 70 Kansas City to Topeka)
Muncie Expressway (Interstate 70, Kansas City)
U. S. 50 (Turkey Creek)

KENTUCKY
Interstate 75 (Covington)

MAINE
Interstate 95 (Portland to Brunswick)

MASSACHUSETTS
Interstate 91 (Conn.-Mass. Line North through Longmeadow-Springfield to Vermont Line)
Interstate 93 (Boston to N. H. Line via Woburn-Andover-Methuen)
Massachusetts Turnpike (Interstate 90)

MICHIGAN
Interstate 75
Interstate 94
Interstate 96

MINNESOTA
Interstate 35 (Mission Creek to Sandstone)
Interstate 35W (Owatonna, north)
Interstate 90 (Austin to Dexter; So. Dakota Line to Beaver Creek)
Interstate 94 (Moorhead, north)
Minneapolis Freeway (Interstate 35W & 694)
St. Paul Freeway (Interstate 35E & 494)

MISSOURI
Interstate 3 (Kansas City, north)
Interstate 35

MONTANA
Interstate 15 (Cascade to Ulin)
Interstate 90 (Tarkio; Drummond; Springdale; Glendive East)
Interstate 94 (Crow Agency to Mardin)

NEBRASKA
Interstate 80 (Omaha to Lincoln)

NEVADA
Interstate 15 (Los Angeles to Las Vegas)
Interstate 80 (Sacramento to Reno)
U. S. 50

NEW HAMPSHIRE
Interstate 89 (Bow-Concord to Lebanon)
Interstate 93 (Franconia-Littleton)

NEW JERSEY
Garden State Parkway (Cape May to Spring Valley)
Henry J. Turner Turnpike (Ridgely Park to Deepwater)

NEW MEXICO
Interstate 10 (Lordsburg to West Arizona Line)
Interstate 25 (Las Cruces to Radium Springs; Socorro to Belen; Las Vegas, north; Glorieta, north and south)
Interstate 40 (Gallup, west; Ft. Wingate to Thoreau; Grants to San Fidel; Laguna to Corrao; Albuquerque, etc.; Moriarty to Clines Corner; Guadalupe County Line to Santa Rosa)

NEW YORK
Cross Westchester Expressway (Interstate 487)
Empire Stateway (Interstate 81, Binghamton to Ogdensburg)
Heckscher State Parkway
Long Island Expressway (Interstate 78, Queens only)
New York State Northway (Interstate 87, Albany to Plattsburgh)
New York State Thruway and Extensions (Interstate 90, Pt. to Mass.; Interstate 87, Selkirk to New York City)
Palisades Interstate Parkway
Sunrise Highway (State Route 25)
Taconic State Parkway (New York City to Albany)
Throgs Neck Bridge (Interstate 78)

NORTH CAROLINA
Interstate 95 (Fayetteville to Dunn)
U. S. 1 (Sanford to Raleigh)
U. S. 29 (Greenville to Gastonia)
U. S. 70 (Salisbury to Raleigh)

NORTH DAKOTA
Interstate 29

INTERSTATE 94
OHIO
Interstate 70 (Springfield to Englewood)
Interstate 71
Interstate 75 (Dayton to Piqua; Wapak to Findlay)
Interstate 90
OKLAHOMA
Interstate 35
Interstate 40
Interstate 44
U. S. 69

OREGON
Interstate 30 (Bendfield Expressway; Columbia River Highway)
Interstate 99 (Baldock Freeway)
Sunset Highway (Portland, west)

PENNSYLVANIA
Interstate 705 (Washington to Pennsylvania Turnpike)
Interstate 83 (New Cumberland to Maryland line)
Pennsylvania Turnpike (Interstate 80S to Valley Forge)
Schuylkill Expressway (Interstate 80S)

SOUTH CAROLINA
U. S. 29 (Greenville to Gastonia)

SOUTH DAKOTA
Interstate 90 (Black Hawk to Rapid City)
Interstate 93 (Sioux Falls to Iowa State Line)
Interstate 95 (Sioux Falls Bypass)

TEXAS
Interstate 10
Interstate 20
Interstate 35
Interstate 45

UTAH
Interstate 15 (Beaver to Paragonah; Harrisburg Bench; St. George, north; Levan to Scipio)
Interstate 70 (Cot Canyon to Emery G. Line)
Interstate 80 (W. Tremonton to Bl. Creek; Henrieville to Echo; Parley's Canyon)
U. S. 40 (Heber to Silver Creek Junction)
U. S. 89 (Mt. Pleasant to Manti; Hatch, south; Kanab to Glen Canyon)
U. S. 160 (Moab, north)

VERMONT
Interstate 91 (Mass. Vt. Line North through Guilford-Brattleboro-Dummerston-Putney)
Interstate (White River Jt. to Montpelier-Burlington-St. Albans)

WASHINGTON
Interstate 10 (Renton and Shore Cutoff; Seattle-Spokane-Coeur d'Alene)
Interstate 99 (Olympia Bypass; Vancouver to Olympia; Tacoma-Everett Freeway; Vancouver Bypass; Auburn-Echo Lake Bypass)

WEST VIRGINIA
Interstate 64
Interstate 77

WISCONSIN
Janesville Bypass
Interstate 90
Interstate 94
Interstate 894 (Bypass around Milwaukee)
Milwaukee County Expressway

WYOMING
Interstate 25 (Cheyenne to Casper)
Interstate 80 (Rawlins to Evanston)
Interstate 90 (Buffalo to Newcastle)

ARMCO DRAINAGE & METAL PRODUCTS



Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company • The Armco International Corporation • Union Wire Rope Corporation

For more facts, use Request Card at page 18 and circle No. 310

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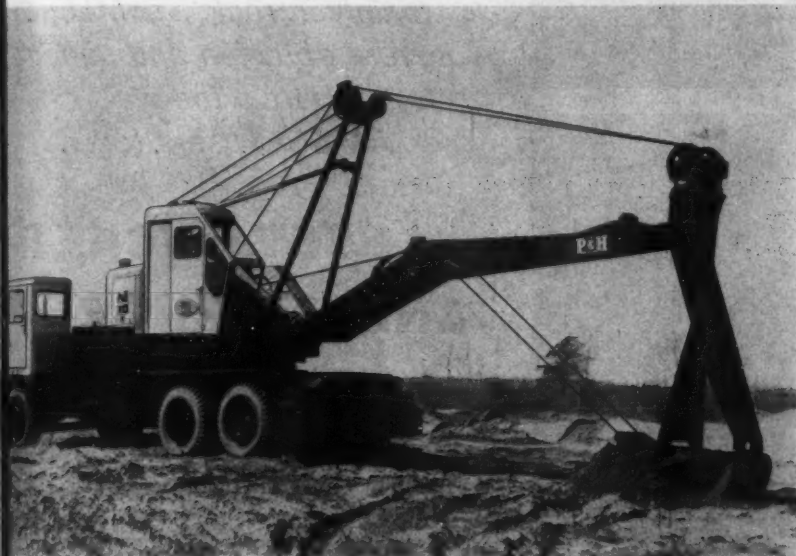
WHEE



PRODUCT PARADE

For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.

Attachments make truck crane versatile rig



Although designed primarily as a 20-ton-capacity truck crane to handle booms up to 140 feet in length, Harnischfeger's new P&H Model 255B-TC is adaptable with front-end attachments to work as a backhoe, shovel, dragline, clamshell, or pile driver.

When equipped with a maximum 110-foot boom and 30-foot jib extension, the unit reportedly is capable of delivering a 5,500-pound load 12 stories above ground or of positioning 4,300-pound loads 60 feet away.

The backhoe attachment digs to depths of more than 21 feet, according to the manufacturer.

All major gears in the crane portion of the unit are sealed inside to deliver maximum efficiency, yet remain trouble-proof from a maintenance standpoint.

Highway speed is reported to reach a maximum 40 mph.

For further information write to the Harnischfeger Corp., Dept. C&E, 4444 W. National Ave., Milwaukee 46, Wis., or use the Request Card that is bound in at page 18. Circle No. 47.

Tractor shovel takes 2 to 3-yard buckets

A new addition to the Trojan line of tractor shovels, the Model 254, is available from Yale & Towne.

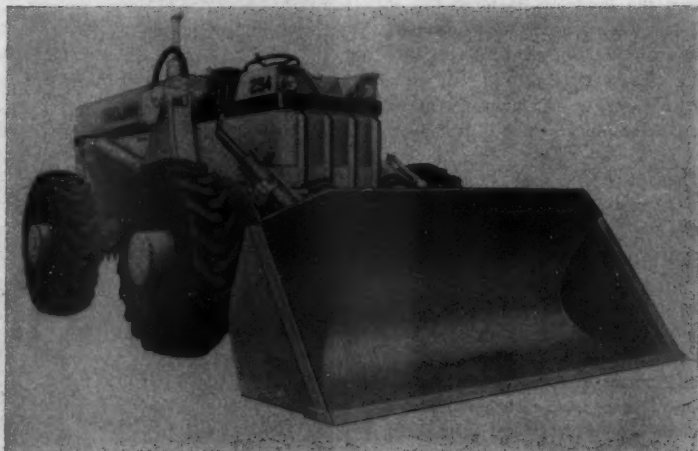
Featuring 15,000-pound lifting capacity and bucket sizes from 2 to 3 cubic yards, the Model 254 is designed primarily to fill the gap between the Trojan Model 204 in the 12,000-pound class and the Model 304 in the 18,000-pound class.

Other features include full power-shift transmission, planetary axles, power steering, and 4-wheel air-powered hydraulic brakes.

Total weight is approximately 24,500 pounds. Over-all length is 20 feet; width (over axle hubs) is 8 feet 10 inches. Forty-degree bucket tip-back at ground-level carry position is provided. Road speed is 24 mph.

A complete line of attachments is available.

For further information write to Trojan Division, The Yale & Towne Mfg. Co., Dept. C&E, Main St., Batavia, N. Y., or use the Request Card at page 18. Circle No. 118.





The L-812 has two rear wheels connected by a shaft to a combination steering and clutch control. Pressing down the steering control handle engages the heavy-duty-forward-drive clutch; raising it engages the reverse.

Powered fork-lift for masonry materials

A powered fork-lift designed to handle palletized or packaged masonry materials has been announced by The Prime Mover Co.

The new machine, designated Model L-812, is powered by a 7-hp Wisconsin engine and has a heavy-duty transmission, differential, and axle that applies the driving force to the front load-carrying wheels.

The L-812 has forks that adjust easily to fit a variety of brick packages, including 100-brick packages and the half-pallet. Capacity of the unit is set to handle two 100-brick packages or 1,000 pounds at 8-inch load center; or one half-pallet of 125 bricks or 800 pounds at 12-inch load center.

The unit features a 2-section telescoping mast that raises the load to 7 feet 6 inches. The collapsed height of the mast is 5 feet 8 inches, and a tilt cylinder is provided for easy access to and from the load. Over-all width of the unit is 31½ inches on single-drive wheels; dual-drive wheels are available for use on soft ground.

For further information write to The Prime-Mover Co., Dept. C&E, Highway 22 E, Muscatine, Iowa, or use the Request Card at page 18. Circle No. 84.

Concrete joint sealer for airport surfaces

PRC Rubber Calk 100, available from the Products Research Co., is designed for use in sealing concrete joints in airport runways, taxi strips, and aprons. It reportedly will withstand fuel and oil spillage, weather, and jet-engine blasts with little or no effect.

According to the manufacturer, pavement sealed with this compound may be placed in service with a minimum of lost time. It is tack-free in 10 minutes, in 20 minutes is firm and flexible, and is completely cured in 24 hours.

For further information write to the Products Research Co., Dept. C&E, 2919 Empire Ave., Burbank, Calif., or use the Request Card at page 18. Circle No. 68.

Motor-in-head vibrator is high-amplitude unit

The Stow Mfg. Co. has available a new high-amplitude 60-cycle motor-in-head vibrator. According to the company, the Model YUA is capable of vibrating an equal volume of ½-inch-slump concrete in less than one-third the time required by previous models.

The YUA has a rugged universal motor built into the vibrator head and operates on 115-volt ac or dc, 25 to 60-cycle. It vibrates at from 12,000 to 15,000 vibrations per minute.

Other features are: a strong wear-resistant casing that covers the electric wires and acts as a handling hose and is available in 7, 14, or 25-foot lengths; a completely covered off-on switch 7 feet from the 2½-inch-diameter head; and a thermal overload switch.

For further information write to the Stow Mfg. Co., Dept. C&E, 40 Shear St., Binghamton, N. Y., or use the Request Card at page 18. Circle No. 56.

More proof that...

**AMSCO HELPS YOU
HANDLE MORE TONS
PER DOLLAR**



Chuck Weinke, shop superintendent (left) and R. J. Bakken, welder, with Amsco tooth which has just been repaired. Teeth are retipped with repointer bars welded on with Amsco Nicra Mang and hard faced with Amsco #20 electrodes. This combination produces stronger welds, less cracking and longer wear.

*Where equipment works
mainly in rock...subject to
severe abrasion and shock.*

*Here's the way
AMSCO users talk...*

**"BEST BUCKET
AND BACKHOE
EVER PUT OUT**

That's operator language from experienced users of Amsco equipment at Ashbach Construction Co., St. Paul, Minnesota. Chuck Weinke, Shop Superintendent... Ray Reichow, foreman, and Elmer Ahlschlager, shovel operator... all agree that Amsco dippers, backhoe buckets and dipper teeth are the best they've ever used.

Ashbach does highway, bridge and dam construction throughout the U. S. Much of its work is in rock, so the firm is specially equipped to handle jobs involving severe abrasion and shock. And that's where Amsco shines!

Chuck Weinke, shop superintendent sums up this way: "The reason we use Amsco products is the long life of the bucket and easier application in welding the teeth. There is so little maintenance in comparison to competitive makes."

Let us give you the service life story on Amsco Manganese Steel Dippers, Backhoe Buckets and Dipper Teeth. Contact your Amsco representative, or write us direct for technical bulletins.

AMSCO

American Manganese Steel Division • Chicago Heights, Ill.
Other plants in: Denver • Los Angeles • New Castle, Delaware • Oakland, California • St. Paul, Minn.
Welding products distributed by Canadian Liquid Air Co., Ltd.

AMERICAN
Brake Shoe
COMPANY



Tests such as this showed how the Flexiguard woven-wire barrier minimizes the possibility of approach-type accidents. It slows the vehicle gradually, reducing likelihood of injury to its occupants.

Highway median barrier helps prevent collisions

U. S. Steel's Cyclone Fence Dept. announces a new type of highway median barrier designed to reduce the frequency of head-on collisions on divided high-speed expressways.

Called Flexiguard, the median barrier combines the strength and resiliency of three wire-rope cables and woven-wire steel fabric strung on

steel H-column line posts.

According to the manufacturer, the steel mesh acts as a resilient trapping device to prevent high-speed vehicles from crossing the medium strip into oncoming traffic. The steel cables will tend to keep cars from overturning or swerving back into their original traffic stream.

A secondary benefit of the woven wire barrier is that it will support vines to serve as a headlight screen.

For further information write to the United States Steel Corp., Cyclone Fence Dept., C&E, 523 W. Sixth St., Los Angeles 14, Calif., or use the card at page 18. Circle No. 59.

Announce new addition to hot-mix plant line

A new, mobile, 3,000-pound hot-mix plant is offered by Hetherington & Berner.

Completely wheel-mounted, it is said to contain many features of the original 2,000 and 4,000-pound plants in the series.

For further information write to Hetherington & Berner, Inc., Dept. C&E, 701 Kentucky Ave., Indianapolis 7, Ind., or use the Request Card at page 18. Circle No. 5.

Machine sweeps debris from pavement joints

A compact 7-hp machine for rapid removal of loose cement, dust, dirt, and debris from pavement joints prior to resealing has been announced by the G. H. Tennant Co.

Designated Model JS, the unit sweeps joints from $\frac{3}{4}$ inch to $2\frac{1}{4}$ inches wide, cleaning to a maximum depth of $1\frac{1}{2}$ inches.

Sweeping action is provided by a 24-gage steel-wire brush rotating at 1,800 rpm.

For further information write to the G. H. Tennant Co., Dept. C&E, 721 N. Lilac Drive, Minneapolis 23, Minn., or use the Request Card at page 18. Circle No. 85.



The joint sweeper's brush, $9\frac{1}{2}$ inches in diameter, throws debris forward, away from the operator.

For more facts, use Request Card at page 18 and circle No. 311



Ashbach Construction Co. shovel, equipped with Amsco Backhoe Bucket, on a road construction job at Fort Snelling, Minnesota. Note rocky terrain.

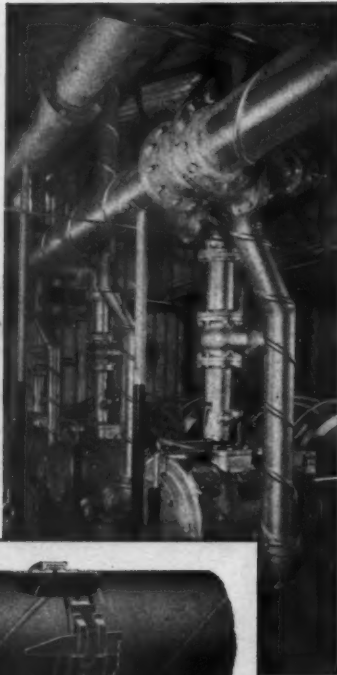
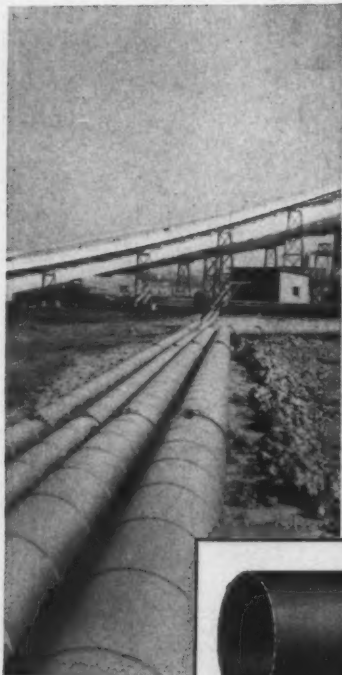
Russell J. Masters, left, and Elmer Ahlschlager, shovel operator, checking the Amsco teeth on an Amsco Dipper.





A rugged 361-cubic-inch 204-hp V-8 gasoline engine is a feature of this 1961 Dodge CT-800 dump truck. Available in five wheelbases from 134 to 212 inches, the CT-800 has a maximum gvwr rating of 45,000 pounds. The unit pictured here has a 10-yard Heil body. For further information write to the Dodge Division, Chrysler Corp., Dept. C&E, 7900 Jos. Campeau Ave., Detroit 31, Mich., or use the Request Card at page 18. Circle No. 37.

LINE-UPS by NAYLOR For Air, Water and Ventilating



The NAYLOR Wedgelock coupling is distinguished by its simplicity and effectiveness. It makes a positive connection, securely anchored in grooved or shoulder ends. A hammer is the only tool required to connect or disconnect it.

Here's pipe designed for economical lines in construction service. It gives you light weight without sacrifice of strength. It's easy to handle and install. It's extra strong and safe because the lockseamed-spiralwelded structure absorbs shock loads, stresses and strains.

For air, water or ventilating lines,

it will pay you to look to NAYLOR for line pipe and Wedgelock couplings. Ask for Bulletin No. 59 for complete details.



NAYLOR PIPE Company

1270 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 90 East 42nd Street, New York 17, N. Y.
For more facts, use Request Card at page 18 and circle No. 312

Dredge has 2-piece hull for easy transport

A series of special design features has been standardized into the Ellicott line of Dragon portable dredges.

The 2-piece hull disassembles quickly for transfer by truck or rail car from one job site to another, and permits reassembly either ashore or in the water. The hull itself is rectangular in shape to provide maximum flotation, safety, and resistance to cutter torque.

Work-stopping damage from cave-ins of rock and debris is eliminated because no important machinery, including hydraulic cutter motor, is under water. All hull connectors are located above the water line, to insure against hull leaks.

The dredge house itself offers ample space for maintenance, operation, ventilation, and safety. There is also a maximum amount of space between the inside of the hull and the actual dredging unit.

For further information write to the Ellicott Machine Corp., Dept. C&E, 1611 Bush St., Baltimore, Md., or use the Request Card at page 18. Circle No. 33.

DUDGEON HYDRAULIC JACKS

SALES
RENTALS

CAPACITY
TO
400 TONS

FOR:
PILE
TESTING
UNDER-
PINNING
BRIDGES
PIPE
PUSHING
SOIL TESTING



Write to
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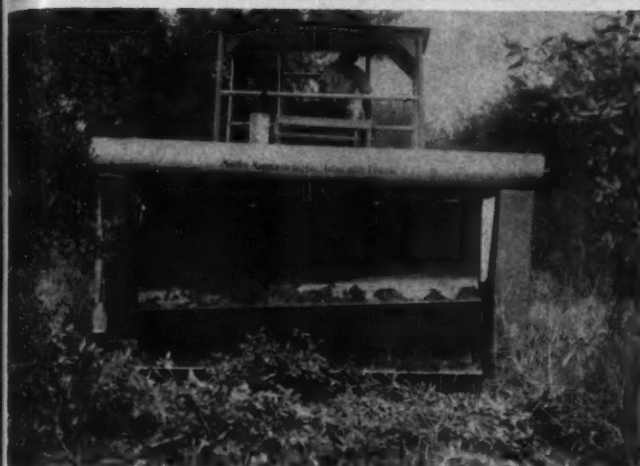
DESIGNERS and
MANUFACTURERS OF
Hydraulic Units
For Special
Applications

**RICHARD
DUDGEON INC.**

789 BERGEN STREET BROOKLYN, N. Y.
• ST. 8-4040 •

For more facts, circle No. 313

CONTRACTORS AND ENGINEERS



Its two cutting drums powered by a pair of 132-hp engines, the Marden Model PB-7 cuts a 7-foot swath through thick underbrush.

Brush-cutting machine is self-propelled unit

A 32,000-pound, self-propelled land-clearing machine capable of cutting oak trees up to 6 inches thick and chopping a 7-foot swath through dense underbrush is announced by the Marden Mfg. Co.

According to the manufacturer, at 4 mph the Model PB-7 can clear approximately 3½ acres per hour.

Twelve heavy moldboards, each holding an air-cooled steel cutting blade, are welded to each conical cutting drum. Because the blades are attached to conical drums, the cutting action of the machine encompasses both a slicing and impact effect, forcing vegetation into the ground rather than scooping it up. Approximately 600 pounds of Metal & Thermit Corp.'s Murex Type FHP coated electrodes and Speedex iron-powder electrodes are used on the drums and frame of each machine.

Motive power is supplied by two 132-hp engines that drive the two cutting drums. Simultaneous control of the two transmissions is achieved through a special hydraulically actuated control system. The transmissions, which can be reversed instantly, offer four speeds forward and four in reverse.

For further information write to the Marden Mfg. Co., Dept. C&E, Auburndale, Fla., or use the Request Card at page 18. Circle No. 67.

New wax for snowplows speeds snow removal

A new snowplow wax, announced by The Gledhill Road Machinery Co., is reported to be specially formulated to improve the efficiency of any moldboard design for fast, easy removal of snow.

The wax produces a hard, slick surface that keeps snow from sticking to the moldboard, reduces friction, and prevents rusting. It is quick drying and nonflammable, and can be applied by brush or spray. One gallon covers 350 feet, states the manufacturer.

For further information write to The Gledhill Road Machinery Co., Dept. C&E, P. O. Box 267, Gallon, Ohio, or use the Request Card at page 18. Circle No. 105.

Winslow TRUCK SCALES PIT AND PITLESS TYPES

Capacities: 15, 18, 20, 30, 40, 50, 60 and 70 tons.

For use at temporary and permanent locations, stockpiles, and by bituminous material contractors at the jobsite.



TYPE CS — PITLESS — PORTABLE

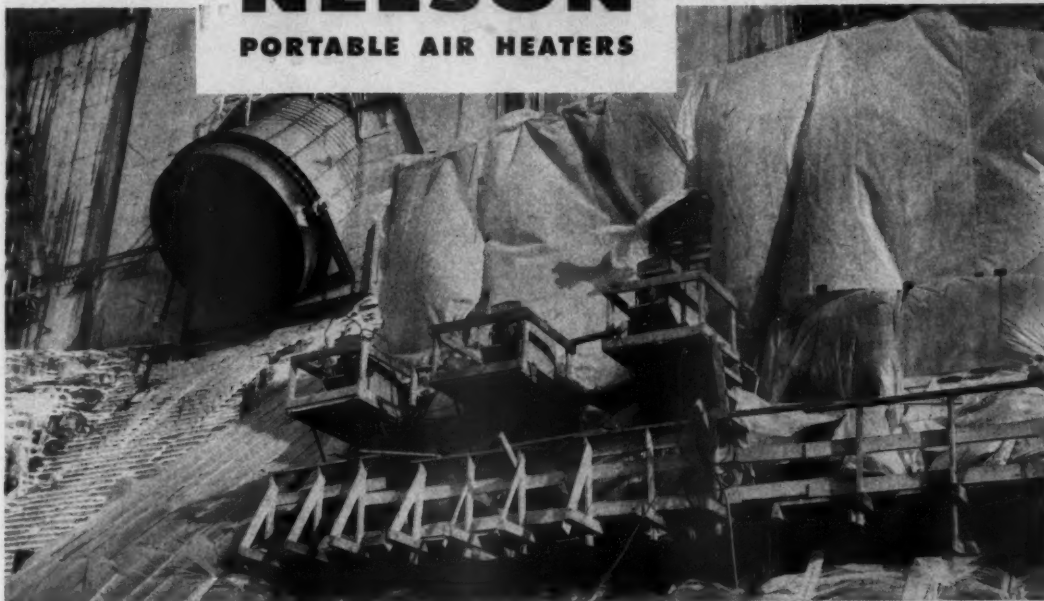
WINSLOW GOVERNMENT STANDARD SCALE WORKS, INC.

2525 Winslow Ave. Phone NOrth 1231 Terre Haute, Ind.

For more facts, use Request Card at page 18 and circle No. 314

count on HERMAN NELSON everybody else does!

PORTABLE AIR HEATERS

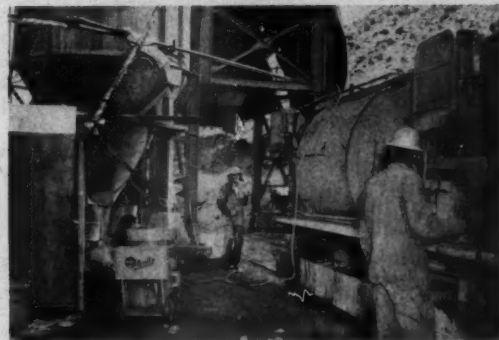


AT NIAGARA POWER PROJECT, world's largest hydroelectric facility, fifty Herman Nelson heaters are in use around the clock, seven days a week. In sub-freezing cold, temperatures are maintained at 50° to 60° F. for curing huge concrete pours

and to keep workmen warm. Heat is directed through canvas ducts—up cliffside, down into pits, around corners. Heaters are standing up well under severest conditions. Contractor: Merritt-Chapman & Scott Corp.



MODERN OFFICE BUILDING near Albany, N. Y. moves into completion, protected from winter cold with reliable portable heat. Smoke, fumes are vented outdoors. The automatic "De Luxe" heater has capacity sufficient to heat 25 ordinary rooms. Contractor: Henry V. Rector, Inc.



\$14 MILLION FREMONT CANYON Power Project in Wyoming used Herman Nelson "Thrifty" heaters for cold weather operations. Here, one is in use at concrete batching plant. Other "Thrifty" heaters were used day and night for curing concrete at powerhouse. Contractor: Coker, Kiewit, Cunningham.



FREE

send for 8 page book

"TAILOR YOUR WEATHER"



AMERICAN AIR FILTER COMPANY, INC.
Portable Products Dept. PH-38, Louisville, Ky.

Send me free 8-page book on how to use portable heater-blowers effectively on all types of jobs.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

For more facts, use coupon or Request Card at page 18 and circle No. 315



At 55 per cent power, 30-minute reserve, the 500B has a range of 1,250 miles. Cruising speed is 218 mph and top speed is 288 mph.

Twin-engine aircraft cruises at 218 mph

The second model in the new line of Aero Commanders, the Commander 500B, is announced by the Aero Design & Engineering Co.

Reduced engine and nacelle size is said to give the 500B the advantage of less drag, better performance, and greater speed.

Powering the 6 to 7-place twin-engine aircraft are two Lycoming 290-hp IO-450 engines with fuel injection.

The plane has a cruising speed of 218 mph and a top speed of 288 mph.

Takeoff distance over a 50-foot obstacle (short field) is 1,550 feet. Landing distance under the same conditions is 1,850 feet.

For further information write to the Aero Design & Engineering Co., Dept. C&E, Box 118, Bethany, Okla., or use the Request Card at page 18. Circle No. 64.

YARDARE BOOSTER! ATECO ripper on this Euclid TC-12 fractures shale for fast, easy scraper loading. Same machine and operator push-loads scrapers and handles bulldozing on the job.



3 Reasons why it pays to use **ATECO RIPPERS...**



BIGGER PAYLOADS with less boosting, less scraper wear and tear are the profitable results of ripping between scraper passes on this cut and fill job. International TD25 with dozer and ATECO ripper is ready to rip, doze or push-load as needed.



LOW COST PAVEMENT BUSTING! ATECO rippers on two Caterpillar 977 loaders make quick work of this repave job. ATECO rippers will break up any kind of unreinforced pavement into easy bucket loading material.

1. Step up production 20% or more! You'll be hours and dollars ahead to rip almost any material first—whether you're loading by scraper, loader or dragline. Just a few passes with an ATECO ripper fractures and loosens anything but solid granite or bar-reinforced concrete into easy-loading condition. You don't need another machine or operator—just put an ATECO ripper on the rear of your dozer tractor or loader. One machine, one operator, is ready to rip, load or bulldoze to give you 20% to 30% higher production at far lower costs per yard!

2. Save wear and tear on loading equipment... Loading ripped material is far easier on your scraper, loader or dozer. You'll get months, even years, of extra service life and save costly downtime and repairs.

3. Eliminate costly shooting and pavement breaking... Rugged ATECO rippers will penetrate, rip and fracture rock, shale, cemented gravel, caliche, hardpan, sandstone, asphalt, non-reinforced concrete—and do it at a fraction of the cost of shooting, drop-ball or pavement breaker operation.

ATECO pioneered the tractor-mounted rock ripper, and builds the most complete ripper line on the market today—for all makes of crawler tractors and crawler-type front-end loaders. ATECO rippers have a world-wide record of superior performance, proved on thousands of jobs. Why settle for less? Write or wire for the facts about ATECO rippers now—please address Dept. 20.

American TRACTOR EQUIPMENT Corporation

Designers and Manufacturers
Since 1920

9131 San Leandro Blvd., Oakland 3, Calif. • 6541 West 65th Street, Chicago 38, Illinois

For more facts, use Request Card at page 18 and circle No. 316

Portable screen units handle 50, 85 tph

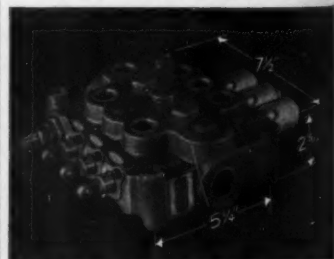
To meet needs for a medium-capacity screening with minimum operator attention, the Eastern Engineering Sales Co. offers its Porto-Screen portable self-contained screen units in capacities of 50 and 85 tph. They consist of feed hopper, Allis-Chalmers single-deck vibrating screen, and sand-discharge conveyor. Power is supplied by a gasoline engine mounted on the frame.

Operating benefits of the portable arrangement include flexibility of plant layout and flow, adequate capacity, ability to exploit small deposits, and reduced maintenance.

The vibrating screen component is a shallow-body unit especially designed for the Porto-Screen equipment.

For further information write to the Eastern Engineering Sales Co., Dept. C&E, 25 W. Howard St., Quincy 69, Mass., or use the Request Card at page 18. Circle No. 74.

Need up to 23 G.P.M. in Fluid Control?



COMPACT HUSCO 3300-SP MULTI-PLUNGER VALVE IS FOR YOU!

One of five basic sizes, HUSCO 3300-SP Valve offers unusual design and performance features that adapt it to wide application. Available to control up to six individual cylinders, single or double acting, permitting up to four positions of control for extreme versatility. Conventional or parallel circuit, check valve controlled. Compact, precision built for long-trouble-free service. Other HUSCO Multi-Plunger Valves in capacities from 3 to 185 G.P.M.

Write for detailed specifications on HUSCO 3300-SP and complete catalog "Husco's House of Ideas"—or engineering aid on your hydraulic control needs.



HYDRAULIC UNIT SPECIALTIES CO.

PUMPS • VALVES • CYLINDERS
P. O. Box 257-E, Waukegan, Wisconsin
West Coast Representatives
EASTMAN PACIFIC CO., Los Angeles, Calif.
ROY BOBBS AIR-DRAULIC CO., Portland, Ore.

For more facts, circle No. 317

CONTRACTORS AND ENGINEERS

This new earthmoving implement can be attached readily to all Ford tractors with Categories I and II three-point implement-linkage systems, and features a broad range of adjustments, many of which can be made from the tractor seat. The blade can be angled, offset, or tilted for a wide variety of earthmoving operations. Blade sizes of 6 or 8 feet are available. For further information write to the Ford Motor Co., Tractor and Implement Division, Dept. C&E, 2500 E. Maple Road, Birmingham, Mich., or use the Request Card at page 18. Circle No. 76.



Hardfacing electrode for tractor grousers

A manual hardfacing electrode for reclaiming such equipment as tractor grousers and other wearing parts subject to severe impact and abrasion is announced by the Stoody Co.

This hardfacing rod, called Stoody 1105, reportedly provides a high deposition rate, with an efficiency of 70 per cent. The electrode can be applied to carbon and low-alloy steels but is not suitable for welding on manganese steel or cast iron.

Deposits of Stoody 1105 are dense, have high-tensile strength, are forgeable, subject to heat treatment, and are machinable with carbide tools.

For further information write to the Stoody Co., Dept. C&E, 11904 E. Slauson Ave., Whittier, Calif., or use the Request Card at page 18. Circle No. 86.

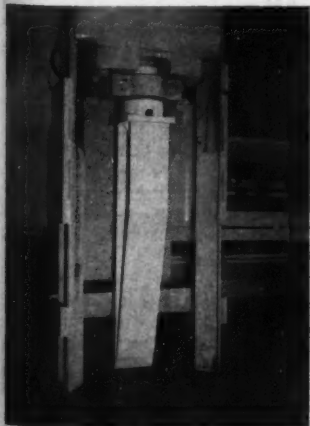
Frost chisel available for hydraulic hammer

A new cutting tool, especially designed to work in deep frost, is offered by the Arrow Mfg. Co.

Designed for use with the Arrow mobile hydraulic hammer, the frost chisel is said to make possible the working of frozen ground where other types of equipment cannot operate successfully. Attached to the hammer, the unit can be dropped repeatedly with a force of as much as 8,000 foot-pounds.

The manufacturer reports that this tool can also be used to cut shale.

For further information write to the Arrow Mfg. Co., Dept. C&E, 194 W. Dakota Ave., Denver 9, Colo., or use the Request Card at page 18. Circle No. 71.



Pounded over 200 times by air hammer... still not cut!

Even after steady pounding with an air hammer, which delivered 80 pounds of pressure to the chisel edge, Gold Seal air hose was still intact! Think of how much you will save on costly replacements should your operator accidentally hammer Gold Seal for a few seconds... or a trucker dump a load of rock on it... or a tractor grinds over it.

A. COVER: Extremely tough, re-

silient rubber; resists abrasion, cutting and gouging.

B. CARCASS: Braided steel wire for maximum strength and resistance to extreme impacts. Single braid of nylon cord to insure maximum bonding of cover to carcass.

C. TUBE: Synthetic compound to insure maximum oil resistance. Won't soften or flake.

Write Dept. E. for more information.

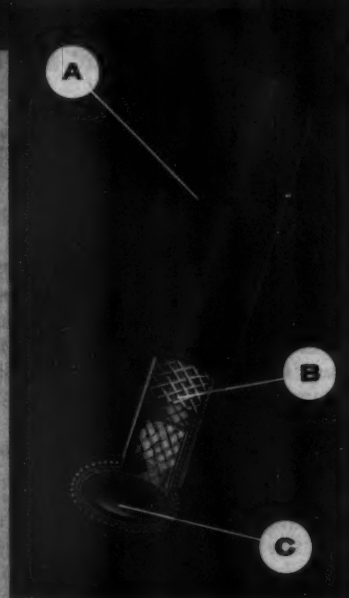
Acme Hamilton

MANUFACTURING CORPORATION, TRENTON 3, N. J.

Divisions: Acme Rubber Mfg. Co. • Hamilton Rubber Mfg. Corp.

ATLANTA • CHICAGO • DETROIT • HOUSTON • INDIANAPOLIS • LOS ANGELES
MILWAUKEE • NEW YORK • PITTSBURGH • SALT LAKE CITY • SAN FRANCISCO • SEATTLE

For more facts, use Request Card at page 18 and circle No. 318



New design announced for mobile welder

Hobart Bros. Co. announces a complete new design in its Weldmobile—a self-contained, self-propelled welding unit with engine directly coupled to the generator.

The larger wheels in the rear with Ground Gripper tires, the implement-type tires in the front, and the greatly increased ground clearance at both axles are reported to improve its mobility over that of previous models.

The unit is designed to provide a mobile self-propelled welding unit for installations in which welding applications occur at widely separated points. Since its towing capacity is

rated at 2,000 pounds drawbar pull, it can tow other equipment or material to the job.

The 400-amp model is powered by a Chrysler 6-cylinder engine, and the 600-amp model is powered by a Chrysler V-8. In addition to welding power, the Weldmobile can supply up to 1 kilowatt (110 volts dc) auxiliary power for operating lights and electric motor powered equipment.

For further information write to the Hobart Bros. Co., Dept. C&E, Hobart Square, Box 8129, Troy, Ohio, or use the Request Card at page 18. Circle No. 65.



Two wells and brackets are located at the rear of the Weldmobile for acetylene and oxygen. Welding, traveling, and power controls are centrally located in front of the driver's seat on a special dashboard.

YOU CAN GET FORD INDUSTRIAL ENGINE SERVICE EVERYWHERE

(including Hawaii and Alaska)

Whatever your job, wherever it takes you, you'll always find a Ford Dealer nearby to give quick assistance in solving any industrial engine problem.

Because this world-wide network of Ford Dealers offers speedy parts delivery and can arrange on-the-job service, your downtime costs are held to a minimum. Because Ford Dealers carry a stock of normal replacement parts, you need never invest in a large parts inventory of your own.

Also ready to serve you from coast to coast is a network of Ford Industrial Power Headquarters. They have the facilities and experience to repower your equipment, regardless of make, with a dependable, low-cost Ford Industrial Engine or Power Unit. Ford engines range from 134 to 534 cubic inches, including three highly efficient Ford diesels.

INDUSTRIAL ENGINE DEPARTMENT, FORD DIVISION, FORD MOTOR CO., P.O. BOX 598, DEARBORN, MICH.

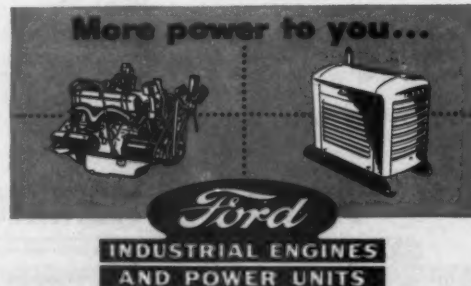
West of Rockies write to:

FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 6787, LOS ANGELES 22, CALIF.

FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 1666, RICHMOND, CALIF.

As a bonus, all Ford engines offer a higher horsepower-to-weight ratio than ever before possible.

To get the right engine for your application, call or visit your Ford Industrial Power Headquarters.



Translucent windbreaks for construction field

H. Wenzel Tent & Duck Co. announces a new type of windbreak for the construction field.

These tarps, called X-Zel, feature crisscross ropes sewed directly to the canvas and forming an "X" with attached center ring for tying to prevent bellying. The windbreaks are made of translucent canvas that allows light to come through yet are completely water-resistant.

For further information write to the H. Wenzel Tent & Duck Co., Dept. C&E, 2200 S. Hanley Road, St. Louis 17, Mo., or use the Request Card at page 18. Circle No. 52.

Truck-tire dumper designed for safety

A new truck-tire dumper and safety inflation tool is available from the Par Sales Co.

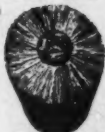
Known as Break-Safe, the unit consists of a conical-shaped base, a spider assembly consisting of four

ROTARY SWEEPER BROOMS

WE MANUFACTURE ALL SIZES

NAME YOURS

- Austin-Western
- Cab Lowby
- Det-Harvester
- Fordson
- Ferguson
- Grass
- Gellerman
- Hough
- Huber
- Jeeps



- Little Giant
- Little Giant
- Melli (M.B.)
- Blumberg
- Bam
- Baco
- Spearwell
- Tamco
- Wayne 2450
- and others

\$695 up

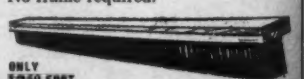
Brooms filled with fibers of Palm-Hickory-Bass-Spring Steel Wires or DuPonts Nylon.

SAVE MONEY — if you fill your own order core only without filler.

RE-FILLING any make size or BUILDING type. New slat-hubs-shaft-cable. PAIRING

WE SHIP WORLDWIDE-IMMEDIATELY Road Builders — it's sensational! ROAD DRAG LEVELERS BROOMS

BIG PECKERWOOD BIG For even distribution of materials six inches wide — lengths to 12 feet. No frame required.



ONLY \$350 FOOT IN STOCK LENGTHS 4', 6', 8', 10' or 12'

COCOA ROLLER MATS — STREET PUSH BROOMS

KENNEDY'S VAN BRUSH MFG. CO. 2728 McGee Trlwy, Kansas City, Mo.

For more facts, circle No. 320

CONTRACTORS AND ENGINEERS



As tire is being inflated, the Break-Safe prevents the possibility of a lock ring flying off.

cross arms, a screw shaft and handle, and two sets of pressure pads.

The wheel is seated on the conical base and positioned to maintain evenly distributed pressure on the bead. Rotation of the lever breaks the bead with ease.

In addition, the Break-Safe is said to prevent the possibility of a lock ring flying off as the tire is being inflated. As air is added, the pressure on the bead and lock ring is controlled. By turning the lever as the tire is inflated, the operator can feel pressure in the tire at all times and can manually control the lock ring until it is safely seated. Only when the rim and tire are properly seated is the Break-Safe removed.

The company points out that the use of hammers on the rim and damage to costly aluminum wheels are eliminated.

For further information write to Par Sales Co., Inc., Dept. C&E, 1647 N. Gower St., Hollywood 28, Calif., or use the Request Card at page 18. Circle No. 50.

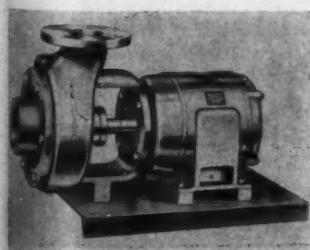
Capacities to 550 gpm with new pump series

A new line of centrifugal pumps has been developed by Hydropump, Inc.

Offered in two models, with three sizes in each model, these pumps, called Series N1000, are furnished both as straight centrifugal and self-priming. They can be furnished either close-coupled to electric motor or pedestal-mounted for user coupling to electric motor, or gas or diesel engines.

The new series is made in capacities up to 550 gpm, and head pressure to 170 feet.

For further information write to Hydropump, Inc., Dept. C&E, 165 S. Fair Oaks Ave., Pasadena, Calif., or use the Request Card at page 18. Circle No. 27.



DIGGING CHISEL

Brunner & Lay

FROST

FROST WEDGE

TOOLS

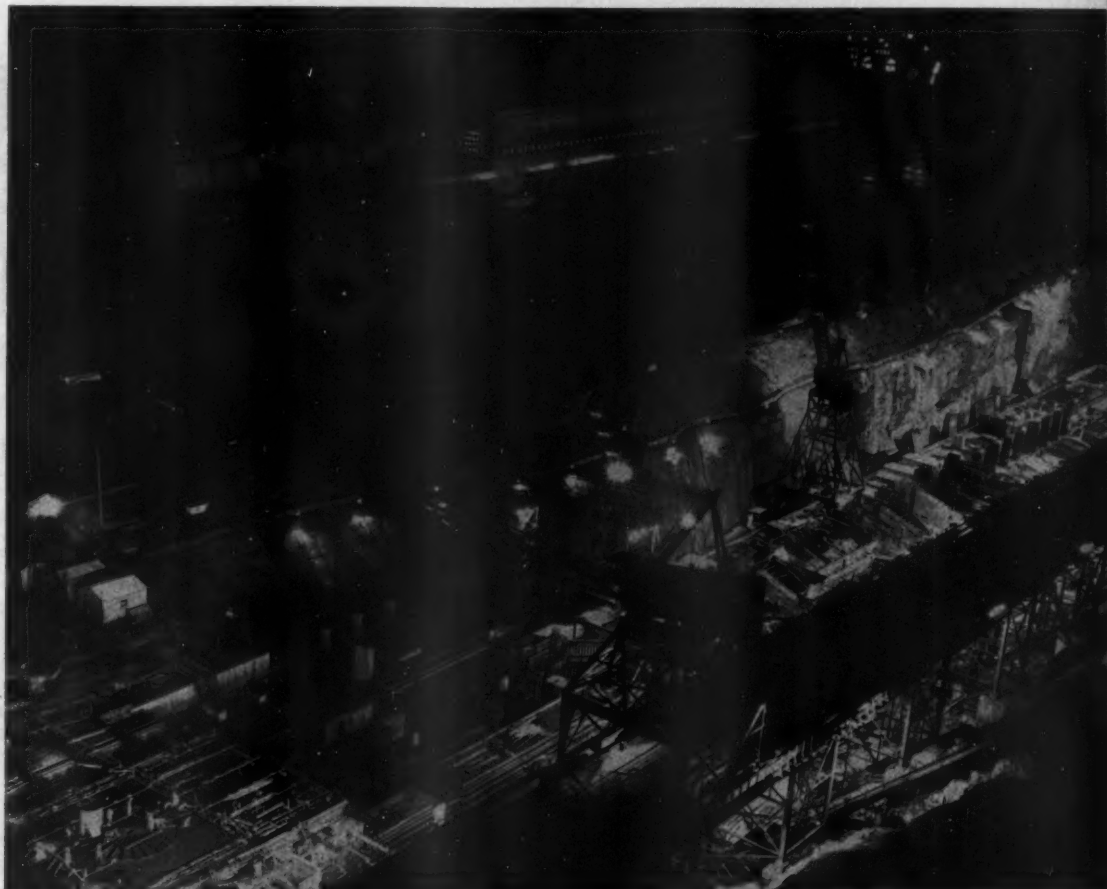
...Keep tight
winter-schedule
jobs moving

Frozen ground gives away easily to the scientifically shaped Brunner & Lay Frost Tools. 77 years of forging and heat treating experience say they're better. Request complete catalog #759. Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill. Plants, conversion shops, dealers from coast to coast.

Brunner & Lay

MOIL POINTS • CLAY SPADES • ASPHALT CUTTERS, etc. • Carbide ROK-Bits • DRILL RODS • COUPLINGS • ADAPTERS • STRIKING BARS • SECTIONAL STEEL

For more facts, use Request Card at page 18 and circle No. 321



DAY-NIGHT 6 AMERICANS WORK AROUND THE CLOCK ON NORTH AMERICA'S BIGGEST POWER PROJECT

WORK NEVER STOPS on the gigantic \$720,000,000 Niagara Power Project, largest hydro-electric development in the Western Hemisphere. Five American Revolvers work at three levels on Merritt-Chapman & Scott's \$98,800,000 contract for the main Niagara Generating Plant. By day they handle material, set forms—at night, pour concrete. A total of 1,200,000 cubic yards of concrete and 42,000 tons of steel will go into this structure alone!

American's work-horse dependability is essential for contractors on penalty jobs like this where equipment failure can eat-up profits fast. Top contractors choose top rated, tough American Cranes to keep jobs on schedule.

Write for detailed, illustrated information on the complete line of American equipment specially engineered for a wide range of construction and materials handling duties—for excavation, erection and operation.

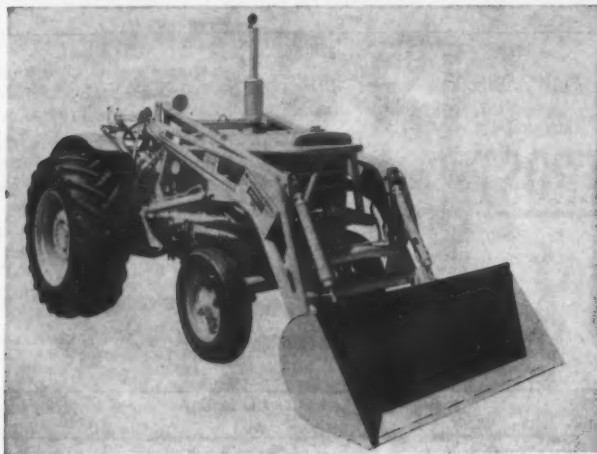
AMERICAN HOIST
and Derrick Company
St. Paul 7, Minnesota

EXCAVATORS-CRANES
to 4½ yds.-110 tons
LOCOMOTIVE CRANES
to 130 tons

DERRICKS-HOISTS
to 800 tons
REVOLVER CRANES
to 400 tons

CROSBY-LAUGHLIN
DIVISION
Forged fittings
for wire rope-chain

For more facts, use Request Card at page 18 and circle No. 322



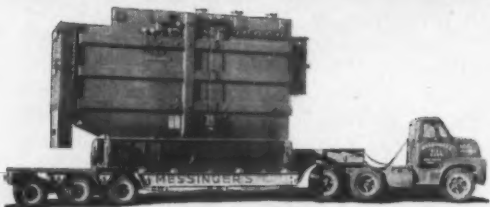
A self-leveling, high-capacity loader, the International Wagner No. 625, has been designed for use with the International 660 tractor. To take full advantage of the tractor's power, the loader has heavy reinforced lift arms braced at the bucket end to produce rigidity at full load. The unit-welded tubular frame construction, bolstered with gusseted braces, gives added strength and durability. Spill-back is eliminated by the self-leveling action. With the tractor's internal hydraulic system, 4,000 pounds can be raised to a full height of approximately 13 feet in 7½ seconds, states the manufacturer. For further information write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 34.

TRANSPORT TRAILERS

OVER THE ROAD . . . ON THE JOB

PROVED

RUGGED • DEPENDABLE



TRIPLE-AXLE MODEL GTX

Positive equalization and distribution of weight on each axle is assured through this exclusive design. Six dual wheels with capacity of 30 through 60 tons. Flat or drop deck. Axles are tubular in type with heavy duty heat-treated alloy steel spindles ground to size to fit heavy duty tapered bearings. All axles are of standard production and have camber for longer tire life.

BUILT BETTER... TO LAST LONGER... TO GO FURTHER!



MODEL GTRY
Triple-axle, with or without removable gooseneck. Capacity 25 through 100 tons.



MODEL XTT
Tandem axle tilt trailer (low type). Capacities 13 through 26 tons.



MODEL GPX
Tandem axle. Capacities 14 through 40 tons. Drop deck or flat deck.



MODEL PTX
Heavy-duty tandem axle with adjustable bolsters. Telescopes from 14' to 38' from tractor.



MODEL PXO
Heavy-duty self-loading tandem axle oil field float.



MODEL GXTT
Gooseneck type, tandem axle tilt-trailer. Capacities 14 through 22 tons.

"TRANSPORTATION ENGINEERING A SPECIALTY"

TRANSPORT TRAILERS pledge to "design better units to convey heavier loads farther at the lowest operating cost, longer."



For more facts, use Request Card at page 18 and circle No. 323

Safety device for trucks rings when unit backs up

The Warn-A-Larm, a safety device for trucks that automatically sets a bell ringing when the unit is backing up, is offered by the Warn Sales Co.

Easily and quickly installed on truck wheels, the alarm is gravity-activated and rings automatically. According to the manufacturer, it rings loud enough to alert anyone close enough to be in danger.

For further information write to the Warn Sales Co., Dept. C&E, Riverton Box 6132, Seattle 88, Wash., or use the Request Card at page 18. Circle No. 87.

Brake and clutch spray adds life to linings

Ceeco Magic, a compound designed to give substantially longer life to brake linings and clutch facings by eliminating excessive friction and heat, is available from the Ceeco Engineering Corp.

Offered in pressure-spray form, it fills all voids and pores in the lining. Wetting agents saturate the lining, and special chemical properties effect a cure as the treated lining dries, according to the manufacturer.

For further information write to the Ceeco Engineering Corp., Tractor Parts Division, Dept. C&E, 1511-13 Border Ave., Torrance, Calif., or use the card at page 18. Circle No. 30.

Vertical blueprint file holds up to 100 prints

A means of volume-filing all popular-size plans, vertically and adjacent to small walls, in closets or other critical space areas is announced by Momar Industries.

An all-steel direct-clamp retainer holds up to 100 blueprints. It is tightened and loosened for plan insertions and removals by three spaced thumb nuts. The unitized top rack slides into, or out of, a full-length channel that is easily applied to any type of frame or overhead section.

For further information write to Momar Industries, Dept. C&E, 4176 W. Montrose Ave., Chicago 41, Ill., or use the Request Card at page 18. Circle No. 61.

CUT COLD
WEATHER
COSTLY
DELAYS
WITH



KIM HOTSTART

Electric Pre-Heater for Diesel and Gasoline Engines

Equipment kept warm between operating periods, ready for instant action. Ideal for units with Torque Converters. KIM prevents cold weather damage; reduces wear and costly down-time. Plugs into electric circuit; draws off cold water from engine; heats and circulates it through engine. Approved and used by all major engine manufacturers.

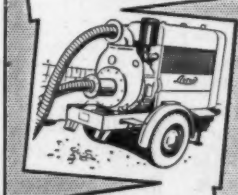
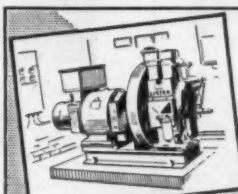
SEE YOUR DEALER or write for free literature:



KIM HOTSTART MANUFACTURING COMPANY

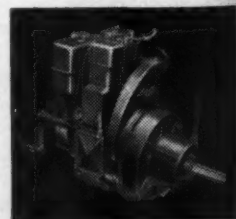
West 917 Broadway Avenue, Spokane 1, Washington

For more facts, use Request Card at page 18 and circle No. 324



LISTER

power
for all
purposes



AIR-COOLED DIESEL ENGINES 1½-72 h.p.

Eliminate Winter Worries
Built-in cold starting for sub-zero temperatures; totally enclosed working parts. No "freeze-ups". Power take-off, full rpm, flywheel end or half speed gear end. Write for data and prices.

LISTER-BLACKSTONE, Inc.
42-52 21st Street, Long Island City 1, N. Y. Tel. STillwell 4-3202
Canadian Lister-Blackstone, Ltd., 1921 Eglinton Ave. E., Toronto 13, Ont.

For more facts, use Request Card at page 18 and circle No. 325

CONTRACTORS AND ENGINEERS



Available for Euclid C-6 and TC-12 tractors, the new Rockland rake features teeth that are reversible and laterally adjustable.

Announce rake for rock, stump, tree clearing

The B-Series Model RF-3 rock, stump, and tree-clearing rake for Euclid tractors has been announced by the Rockland Allied Equipment Co. The rake is equipped with teeth that are laterally adjustable and reversible to permit use of both ends.

This equipment is available for Euclid C-6 and TC-12 tractors.

For further information write to the Rockland Allied Equipment Co., Dept. C&E, 3778 W. Colonial Drive, Orlando, Fla., or use the Request Card at page 18. Circle No. 32.

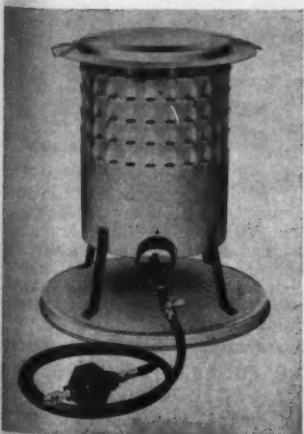
late LP-gas heater of 85,000 Btu

A new 85,000-Btu LP-gas heater is announced by the Scheu Products Co.

The Hy-Lo unit is available in two models—one with a manual control valve, the other with a safety pilot control LP-gas regulator. It stands 24½ inches high and weighs approximately 21 pounds.

Low, lightweight design is said to release heat close to the floor for better distribution. Heating by radiant heat, it warms workmen and materials around the heater area with little heat loss to the surrounding air.

For further information write to the Scheu Products Co., Dept. C&E, 207 Stowell St., Upland, Calif., or use the Request Card at page 18. Circle No. 53.



Scheu's Hy-Lo unit.

Asphalt-based material for antiskid surface

A new long-wearing, skid-resistant, nonspattering road-surfacing material is offered by Allied Chemical's Barrett Division.

On a wet surface of this asphalt-based material, states the company, an automobile can be brought to a safe stop at least one car length quicker, at normal road speeds, than on conventional surfaces when wet. Another advantage of this hot-mix surface treatment is said to be the elimination of noise, muss, and delays associated with conventional treatments involving a coating of tar or

asphalt overlaid with sand or crushed stone.

Called Dix-Seal, the material can be applied with standard road graders, paving machines, or a spreader box installed on a snowplow truck. Vehicles can drive over it immediately after it has been laid, without spatter, according to the manufacturer.

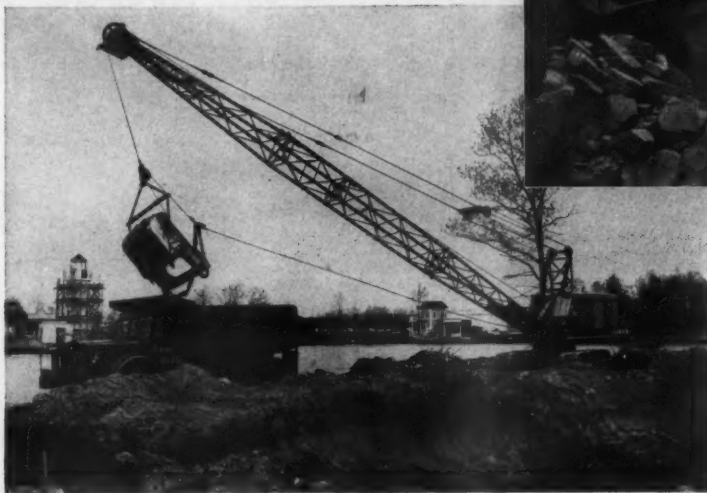
For further information write to the Allied Chemical Corp., Barrett Division, Dept. C&E, 40 Rector St., New York 6, N. Y., or use the Request Card at page 18. Circle No. 87.

RUGGED ROCK SHOVEL

FAST CYCLE DRAGLINE



Stripping a hill of rock, the "85-A" shovel combines powerful crowding action with smooth swings, loads out trucks fast. Dipper stick made of "T-1" steel. Air dipper trip for fast dump cycles.



Long reach of this 70-ft. boom speeds work as this "85-A" dragline dredges out a pond. Lorain's exclusive Square-Tubular-Chord boom is lighter and stronger, provides longer reaches, bigger capacities.

CONVERTIBILITY MEANS WORKABILITY WITH A LORAIN 85-A

Many rigs are convertible in name only. When it comes to on-the-job performance they show up as one-purpose machines.

Not the 2½-yard Lorain 85-A. It converts so easily that field changes are a breeze. On the job, it has the power and control to pay off on all kinds of work. Everything from tough shovel and hoe digging to dragline, clamshell or crane operations.

The "85-A" gets its versatility from its design. There are three power shafts for simultaneous hoist, swing and

travel . . . two-lever "Joy-Stick" air power controls that blend operations for faster shovel-crane cycles. There's warranted "Shear-Ball" connection for rock steady swings, minimum maintenance . . . and a two-speed crawler with independent travel and air ease controls. Plus many others.

If you are looking for a heavy-duty rig that will boost your output and widen your workability, ask your Lorain distributor about the 85-A.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

LORAIN. ON THE MOVE

PLANTS: In Lorain, Elyria and Bucyrus, Ohio . . . PRODUCTS: Power shovels, cranes, draglines, clamshells, and hoes on crawlers from ¾- to 2½-yard capacity • Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes • Rubber tire front-end Moto-Loaders in 6000-lb. and 7000-lb. carrying capacity . . . OUTLETS: Lorain products sold and serviced by 249 distributor outlets throughout the world.

For more facts, use Request Card at page 18 and circle No. 326



The two outer compactor units on this Jackson machine can be quickly elevated to a traveling width of 88 inches.

Vibratory compactor has two new features

Jackson Vibrators, Inc., announces two important new features in the firm's vibratory compactor.

The first is a hydraulically actuated device whereby the two outer compactor units on each side of the work-head are quickly elevated to the vertical position to provide an over-all width of 88 inches for normal traveling from job to job, and for easy maneuverability around other equipment on the job. This can be accomplished by the compactor operator in

approximately 30 seconds, the company states.

The other feature is a new widening attachment for towing the required compactor units at the side of the rig. This is equipped with a hydraulic device that instantly lowers and lifts the units.

For further information write to Jackson Vibrators, Inc., Dept. C&E, S. Jackson Road, Ludington, Mich., or use the Request Card at page 18, Circle No. 8.



Steel wheels specified. Dual pneumatic tires standard.

LIMA AUSTIN-WESTERN

Crushes old concrete to aggregate subbase

"We crush old concrete into 2½-in. aggregate for a subbase on asphalt and stone parking areas. Our portable Lima Austin-Western 2036 primary jaw crusher turns out a high daily tonnage with an absolute minimum of maintenance. We also have a Lima A-W apron feeder on another plant. The feeder has doubled production.

"Based on our experience with the crusher, feeder, and an Austin-Western grader, I'd say that the

Baldwin-Lima-Hamilton Corporation turns out quality products which hold up longer and do better jobs than most competitive equipment."—George H. Souter, Gargaro & Souter, Inc., Detroit.

Lima Austin-Western offers a complete line of top quality crushing, screening and washing equipment. The finest materials, skilled workmanship, simplicity of design, and engineering experience are reflected in performance records. Depend on Lima Austin-

Westerns for accurately sized gravel in quantity and years of trouble-free service. Choice of compact, self-contained portable units or custom-engineered stationary installations. Both types assure you high-speed operation and lower tonnage costs. Ask a Lima A-W owner. See your nearest Lima Austin-Western distributor for facts and figures. Or write to Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA AUSTIN-WESTERN Crushing, Screening and Washing Equipment
BALDWIN · LIMA · HAMILTON
CONSTRUCTION EQUIPMENT DIVISION • LIMA, OHIO



For more facts, use Request Card at page 18 and circle No. 327

YOU CAN'T OUTGROW A ROLCOR ROLLER



Here's a two-ton vibratory roller that produces compaction to equal or exceed static rollers weighing eight tons! Vibrapac is 100% American designed and built specifically for asphalt and soil compaction—no corrugation of surfaces. A single lever clutch shifts from static to vibratory action. Works in close places.

ROSCO MANUFACTURING CO.
ROLCOR DIVISION
3118 Snelling Ave. • Minneapolis 6, Minn.

For more facts, circle No. 328

CONTRACTORS AND ENGINEERS

Hydraulic hoe attachment for crawler excavator

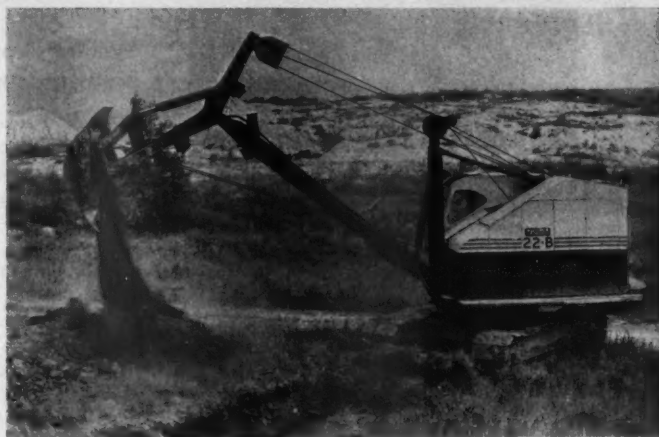
The Bucyrus-Erie Co. announces a new 2-in-1 hydraulic hoe attachment, designed for hoe or front-end-loader application with Model 22-B crawler machines.

This attachment is said to be particularly advantageous for trenching in cramped, congested quarters or in areas normally restricted to smaller excavators. Important features include a 15-foot boom; a hydraulic Hoe-Down device that acts as a hydraulic brake to hold down the boom; and push-button, hydraulic-powered wrist action for a 1½-yard 72-inch-

wide dipper. The trench-wide dipper (84 inches with side cutters) has two cutting edges with teeth for operation as a hoe or front-end loader.

In addition to increasing capacity, the combination of boom hold-down pressure and trench-wide wrist-action dipper eases leveling and cleanout, and relieves hand labor for other work.

For further information write to the Bucyrus-Erie Co., Dept. C&E, South Milwaukee, Wis., or use the Request Card that is bound in at page 18. Circle No. 36.



For use as hoe or front-end loader, the new Bucyrus-Erie attachment is designed for Model 22-B crawler machines.

New portable drill is gasoline-powered

The Port-O-Drill, a portable, gasoline-powered drilling tool for numerous applications, is announced by the Schnacke Mfg. Corp.

Power is supplied by a self-contained 2.2-hp 2-cycle air-cooled gasoline engine with a pressurized fuel tank that permits complete portability. According to the manufacturer, it can be used continuously at any angle of operation, indoors and outdoors, independent of auxiliary power sources.

Total weight of the machine is only 30 pounds; over-all height is 24 inches. A recoil starter permits easy, rapid starting.

The Port-O-Drill is designed for metal, masonry, and rock drilling, wood boring, and earth augering.

For further information write to the Schnacke Mfg. Corp., Dept. C&E, 1016 E. Columbia St., Evansville 7, Ind., or use the Request Card at page 18. Circle No. 111.



240 CUTS FAST ACCURATE 34"x 46" TRENCH FOR CONCRETE PIPE

This Cleveland 240 Trencher is digging trench 34 inches wide by 46 inches deep for installation of 12-inch concrete pipe in an underground irrigation system in Lunn County, Texas. It is one of a fleet of more than ten Cleverlands employed by Gifford-Hill-Western, Inc., one of the leaders in the design, engineering and installation of irrigation systems throughout the Southwest. Gifford-Hill-Western uses its Cleverlands for fast accurate digging of square-bottom trench for 12, 15 and 18-inch concrete pipe with a normal cover of 30 inches.

There are 10 rugged models in the complete Cleveland Trencher line—with a digging range of 8 to 52 inches wide, down to 8½ feet deep—for every type of trenching job—from house footings and utilities lines up to 36-inch cross-country pipelines. Ask your local distributor for the Cleveland Full Line Bulletin L-109... or write:



The Cleveland 240 is used on all types of trenching jobs... irrigation and drainage projects... cross-country pipelines... gas, water and sewer lines... conduits and cable work... any trenching job up to 3' wide, down to 6' 3" deep.



CLEVELAND TRENCHER

THE CLEVELAND TRENCHER CO., 20100 ST. CLAIR AVE., CLEVELAND 17, OHIO
For more facts, use Request Card at page 18 and circle No. 330

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Ph: Logan 4-8373 • P. O. Box 190

For more facts, circle No. 329

Here is the Sur/Fax road unit, ready for a highway survey.



System photo-records highway surfaces

A new system of photo-recording highway surfaces is announced by the Aero Service Corp.

Called Sur/Fax, the system includes a precise strip camera, a specially equipped truck, a film projector, and a reader-printer.

The Sur/Fax truck unit carries a stabilized, vibration-free continuous-strip camera. It records highway surfaces as wide as 36 feet in a single traverse, on 35-mm film, at a scale of 1 inch to each 36 feet.

The truck also mounts a battery of shielded, high-powered lights. These provide a constant level of light, beamed at a constant angle to obtain just the right degree of light and shadow. Under this controlled lighting system, such conditions as faulting, scaling, and cracking are readily identifiable.

Surveys are made at night—to avoid traffic and daylight—at speeds of 20 to 30 mph. (Sunlight, at varying degrees of intensity and changing angles to the highway surface, will not provide the constant light source needed for these surveys.) A generator in the rear of the truck provides power for lights and camera.

The Sur/Fax continuous-strip film positives may be projected as large as 10 x 10 feet for staff conference studies. They are also useful for presentation of highway maintenance problems to public officials, legislators, and civic groups, the manufacturer points out.

With the Sur/Fax projector, the film may be viewed at a rate equivalent to slow walking speed—about 2 mph. The adjustable-speed driving mechanism can be stepped up to an equivalent of 30 mph, or it can be stopped and a film section "held" on the screen for detailed examination.

For detailed analysis, a specially modified reader-printer is used. The film strip is projected onto an 18 x 24-inch viewing screen. As pavement sections that require continued study come into view, a touch of the push button stops the film and makes a positive print. This print is delivered within 30 seconds. It may be annotated and used as an actual work sheet by maintenance crews.

Sur/Fax record forms are provided for engineers and technicians to note the data seen on the continuous-strip film. For rigid pavements, such facts include: cracks of all types, scale, spalling, and faulting. For flexible pavement, the recorded conditions include: alligator-type or other cracks, raveling, rutting, settlement, and bleeding.

According to Aero Service, these data can be transferred to IBM punch cards for statistical analyses and broad studies of highway conditions over large areas.

For further information write to the Aero Service Corp., Dept. C&E, 210 E. Courtland St., Philadelphia 20, Pa., or use the Request Card at page 18. Circle No. 90.

Transit mixer hauls more than 15 yards

A horizontal truck mixer that permits loads in excess of 15 cubic yards is announced by the Chain Belt Co. This Rex truck mixer, mounted on a Rex off-highway diesel carrier, is reportedly the largest of its kind.

When filled to capacity, the total weight of the carrier-mixer, including 500 gallons of mixing water, is over 50 tons. Without a payload it weighs 42,840 pounds.

For further information write to the Chain Belt Co., Dept. C&E, 4701 W. Greenfield Ave., Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 80.

CONTRACTORS REDUCE LABOR COSTS with hydraulically mechanized MATERIALS HANDLING



Contractors such as Peter Kiewit Sons' Co., Guy F. Atkinson Co., and many others are reducing costs with the one man operated, fully hydraulic, Hiab Speed Loader. The Hiab provides hydraulically mechanized materials handling on a wide variety of utility jobs at LOW COST.

The HIAB 170 offers a range of lifting capacities from 6000 lbs. on the shortened boom of 8' to 2200 lbs. on a full boom of 13'. The boom length is easily adjustable through hydraulic control. Control is from either side of the truck cab.

Ideal for general maintenance work, the HIAB 170 will lift up to 20' above ground level at a maximum speed of 20" per second. Crane action is positive and accurate. 200° or 360° swing arc. When not in use the HIAB 170 folds snugly behind the cab, taking only 15" of space. This leaves the entire truck bed open for load.

Also available is the HIAB "Bimbo" Model 290 — a smaller version of the HIAB 170, with similar design features.

WRITE FOR NAME OF YOUR NEAREST DEALER

Starco **Starco**
EQUIPMENT & SALES INC. EQUIPMENT & SALES INC.
1866 Ninth Street 11901 So. Avenue "O" St.
Santa Monica, California Chicago 17, Illinois

For more facts, use Request Card at page 18 and circle No. 331

THREE JOHNSON ALL-WELDED BUCKETS

TO MEET YOUR CLAMSHELL NEEDS



WIDE REMANDING
Live loads are stepped up to maximum because all dead weight is eliminated. Ideal for handling loose materials.

GENERAL PURPOSE
Shown at left, this bucket has low center of gravity to concentrate full digging power on lips, teeth. Manganese cutting edges get tougher with use.

HEAVY-DUTY DIGGING
Weight saved by welded construction in other parts is put back in sides, lips and bottom for deeper penetration and extra digging power.

C. S. JOHNSON CO.
Champaign, Ill. • Stockton, Calif.

KOEHRING
A Division of
Company

Please send more data on _____ cu. yd. . . .

- ☐ Rehandling Clamshells
- ☐ General Purpose Clamshells
- ☐ Heavy-Duty Clamshells

Name _____
Company _____
Street _____
City _____ Zone _____ State _____

JII C&E

For more facts, use coupon or Request Card at page 18 and circle No. 332



New detachable, ALL-weather Cab for Caterpillar D-6, Series B

Don't let the weather stop your jobs; rain, snow or heat won't bother your operator when he's protected by a comfortable Campbell Cab. This heavy-gauge steel cab, specifically designed for the D-6, easily attached or removed, provides many operator comfort features. Full-vision, safety glass windows mounted in rubber; three-piece sliding glass windshield for better ventilation; canvas covered rear opening for rear-mounted hydraulic controls; two full-size sliding doors, are features which make this cab far superior to any other. Optional equipment includes: windshield wipers, sun visor, rear-view mirror, locking handle and heater-defroster unit. Get full details from your Caterpillar distributor or write direct.

CAMPBELL detachable cab company
WAUCONDA, ILL.

For more facts, use Request Card at page 18 and circle No. 333

MOBILE OFFICE UNITS...



Save TIME... and MONEY!!!

MOBILE OFFICE Units are low in cost... Built to your specifications... There's a unit to fill your every need.

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Phonics: DORchester 3-1048

7314 Stony Island Avenue, Chicago 49, Illinois
For more facts, use Request Card at page 18 and circle No. 334

CONTRACTORS AND ENGINEERS

The Rex Motor Co. truck and inch bump measurement. and D-700 Rex's Gold line.

The series two single ratings of two tandem ratings of

W. J. KO

This dozer... out to... crusher. T... effectively use... crusher.

The KOLM Plant is avail... ing accessories... most any typ... and Feeder-T... loading opera... ing Hopper... especially for... ing units, from... shovels and d...

Complete f... with the Con... and Feeder-T... and push load...

Further ope... is achieved th... or triple deck... as unusually... mobile simu... while scalping... a single deck...



Truck-tractors are 90 inches bumper to back of cab

The Reo Division of The White Motor Co. has announced a new V-8 truck and tractor series with a 90-inch bumper-to-back-of-cab measurement. All models in the D-600 and D-700 series are powered by Reo's Gold Comet V-8 gasoline engine.

The series consists of six models: two single-axle tractors with gcw ratings of 65,000 and 78,000 pounds; two tandem-axle tractors with gcw ratings of 70,000 and 78,000 pounds;

and two tandem truck models with gcw ratings of 42,000 and 52,000 pounds, respectively.

The 90-inch bumper-to-back-of-cab measurement permits the tractors in this series to haul 40-foot square-nose trailers within 50-foot legal limits, states the manufacturer.

For further information write to The White Motor Co., Reo Division, Dept. C&E, Washington Ave., Lansing 20, Mich., or use the Request Card at page 18. Circle No. 122.

With Either Push Loading or Top Loading **KOLMAN** turns out production!



This dozer-charged KOLMAN Model 101 is dumping out boulders from material being fed into crusher. The KOLMAN Plant is also very effectively used for rejecting fines ahead of a crusher.



This Model 101 with Feeder-Trap, Wing Walls and Single Deck Screen is equipped with Conversion Hopper for top loading with dragline. Hopper is easily removed from Trap for high speed dozer charging.

The KOLMAN Model 101 Conveyor-Screen Plant is available with a wide choice of feeding accessories which facilitate charging with any type of equipment. The Dozer Trap and Feeder-Trap are ideal accessories for push loading operations with a bulldozer. The Cast-Hopper and Feeder-Hopper are designed especially for top loading with various charging units, from front end loaders and trucks to shovels and draglines.

Complete flexibility is now also available with the Conversion Hopper for Dozer Traps and Feeder-Traps, making both top loading and push loading practical with the same plant.

Further adaptability to any job requirement is achieved through a choice of single, double, or triple deck Screens on the Model 101. Thus an unusually low equipment investment makes possible simultaneous loading and screening while scalping oversize or rejecting fines with a single deck, both scalping and rejecting at

once with a double deck or grading and classifying with the triple deck Vibrating Screen.

Yes, KOLMAN has the answer for low cost, high production screening and loading. Complete selection of sizes from 18" to 48" belt widths, lengths up to 60', and screens to 5' x 12' on Conveyor-Screen Plants. Portable 101 Conveyors also available up to 80' lengths and loaders up to 60" belt widths. Write for literature and prices.

KOLMAN Manufacturing Co.

4922 West 12th St. Sioux Falls, S. D.

For more facts, use Request Card at page 18 and circle No. 335

Direct-drive chain saw lighter, more powerful

Featured in the new line of chain saws available from the Lombard Governor Corp. is the Tornado 652, a direct-drive 5-hp saw with a smaller, lighter, more powerful engine.

The saw weighs 17½ pounds less bar and chain, and features the firm's multiple-position starter, which permits the operator to place the starter pull cord at any angle for comfort and ease of starting.

Other features include a chain oil system that permits the saw to be cleaned from one exposed position; front exhaust muffler; and a hand roller centrally located for left or

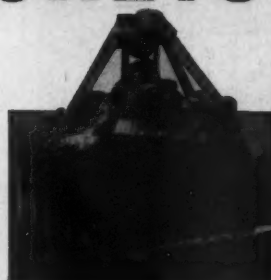


right-handed operators.

For further information write to the Lombard Governor Corp., Dept. C&E, 68 Main St., Ashland, Mass., or use the Request Card that is bound in at page 18 of this issue. Circle No. 13.

OWEN BUCKETS

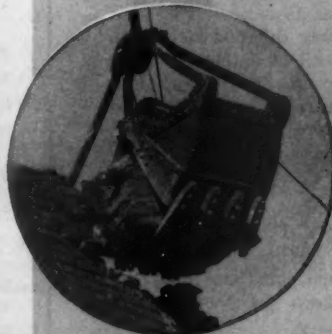
ALL
THEM
THE
GIANT
OF



The following five combined features make OWEN the big giant performer . . . for any type of clamshell work . . . for any model or make of crane.

1. Block and Tackle Type Reeving
2. One-Piece Head Construction
3. Riveted Bowl Assembly
4. Single Main Shaft
5. Recessed Lips

Added to these construction features are more than fifty years experience in the manufacturing of clamshells . . . and nothing else! For any job that requires a clamshell, there is an Owen to fill the bill . . . backed by proven construction design and over one-half century of experience.



Put the Giant on your crane — OWEN — and know the work will be done faster, better and more economically.

Write today for any specific or additional information

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BREAKWATER AVENUE, CLEVELAND 2, OHIO

BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.

For more facts, use Request Card at page 18 and circle No. 336

Scope permits reading distances to 1,000 feet

A new pocket-size survey scope is announced by the Vexilar Engineering Co.

With this unit, distances from 40 to 1,000 feet can be read directly off the calibrated scale.

According to the company, engineers and contractors find many uses for this unit when terrain, time, and circumstances prohibit measurement by other means.

For further information write to the Vexilar Engineering Co., Dept. C&E, Box 6129, Minneapolis 26, Minn., or use the Request Card at page 18. Circle No. 45.



Sunlight, precipitation, and dust do not affect operation of the Safe-T-Flash, a transistorized safety light with a choice of two flash rates and durations.

Transistorized flasher mounts on barricades

A transistorized highway safety light suitable for mounting on saw-horses and barricades is available from The Fisher-Pierce Co.

The Safe-T-Flash produces precisely timed flashes through a 7-inch amber-colored plastic lens designed for maximum brilliance. It operates continuously at a choice of two flash rates and durations.

According to the manufacturer, the unit is not affected by direct sunlight, rain, sleet, hail, snow, or dust. The lamp and sealed-in transistor circuit are included in the shock and vibration-resistant Flash Pak, which is easily attached to a 6-volt battery.

For further information write to The Fisher-Pierce Co., Dept. C&E, 170 Pearl St., South Braintree 85, Mass., or use the Request Card at page 18. Circle No. 98.

Add new abrasive blade to break-resistant line

The Clipper Mfg. Co. announces an addition to its Blue Bond break-resistant abrasive blades, the MR 926.

The blade was especially developed for use on extremely abrasive materials such as concrete block of all types, a wide range of refractories, and building materials such as sandstone, precast units, etc.

The MR 926 is available in 14, 18, and 20-inch sizes.

For further information write to The Clipper Mfg. Co., Dept. C&E, 2800 Warwick, Suite 142, Kansas City 8, Mo., or use the Request Card at page 18. Circle No. 102.

Cylinder capping set for concrete testing

A basic cylinder capping set for preparing compression-test specimens of concrete is offered by Solitest, Inc., for laboratories that need to cap relatively few concrete cylinders.

The new set, for vertical-type capping, includes all items needed for efficient capping of 6 x 12-inch cylinders, states the manufacturer.

For further information write to Solitest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 57.

Ratchet-type load binder made for 3 chain sizes

A new ratchet-type load binder, designed to "get the last half link of chain" in take-up, is offered by the Crosby-Laughlin Division of the American Hoist & Derrick Co.

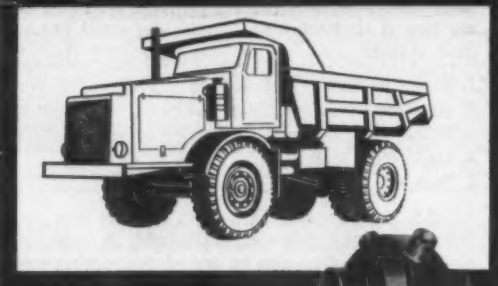
Features include rigid one-piece construction with no bolts or nuts to loosen, a rustproof ratchet spring, and an extra heavy barrel.

This new Lebus load binder has forged alloy hooks, a one-piece handle, and requires no cheater to bind a load tight. It is available in three models to fit chain sizes of 3/4, 1/2, and 5/8 inch.

For further information write to



how **NoSPIN**
DIFFERENTIALS IMPROVE
HEAVY CONSTRUCTION
EQUIPMENT OPERATION



NoSPINS are the only differentials manufactured that direct all available power to drive wheels having traction—giving full-time equipment control. NoSPINS automatically permit differences in wheel speeds when required for making turns or negotiating obstructions in a forward or rearward direction.

NoSPINS ARE EASY TO INSTALL—no special tools needed. NoSPINS ARE ECONOMICAL—you can obtain them from your dealer or specify them on your original equipment.

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Manufacturers of THORNTON Four Wheel DRIVES,
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For more facts, use Request Card at page 18 and circle No. 337

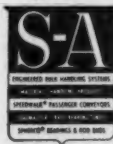
SAVE CONVEYOR BELTS! with a STEPHENS-ADAMSON BELT CLEANER



WRITE
FOR
BULLETIN
258

Check these features

- Inexpensive, but most effective belt cleaner ever developed.
- Removes wet, dry or sticky material from belt.
- Prevents material from being ground into belt.
- No messy dribble to be cleaned up.
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- No moving parts—requires no drive.
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PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA
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For more facts, use Request Card at page 18 and circle No. 338

Reduce Job Costs ... drill through hardest masonry at high speed



**HOFFMAN
Thin Wall
DIAMOND
BITS**

Hoffman Bits drill 1" to 2" deep per minute on modern equipment like this new "Roto-Kor" Drilling Machine.

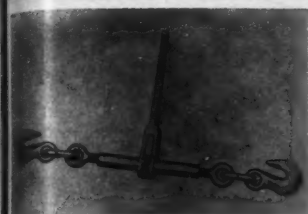
Drill right through hardest reinforced concrete, tile, asphalt, etc. Cut holes to exact size on first pass. From 1/2" to 14" dia. Hoffman Bits are Diamond Impregnated or Surface Set... fit any machine... assure fast, easy installation of conduit, piping, air conditioning units, etc.

Write for Illustrated Literature and Prices—FREE

HOFFMAN BROS. DRILLING CO.
BOX 426, FUNXSUTAWNEY, PA.

For more facts, use Request Card at page 18 and circle No. 339

CONTRACTORS AND ENGINEERS



The American Hoist & Derrick Co., Crosby-Laughlin Division, Dept. C&E, Box 570, Fort Wayne, Ind., or use the card at page 18. Circle No. 77.

Strutless track link wears more evenly

A new strutless track link providing a more even wear pattern and additional wear surface is available for the International TD-20 crawler.

Ends of the strutless link have been rounded to be concentric with the track pin, in order to prevent interference with the track roller when the chain is bent in a reverse direction.

Because of the new link's enlarged center opening, the manufacturer states, there is no vertical strut interference. The opening permits the tracks to clean themselves.

For further information write to the International Harvester Co., Construction Equipment Division, Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 106.

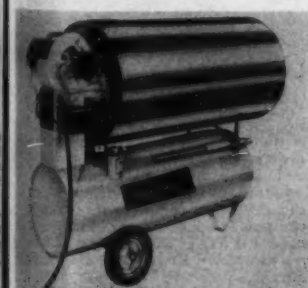
Space heater produces 350,000 Btu per hour

The White Mfg. Co., Inc., announces the addition of a new model to its line of portable construction heaters. The Model H-3 has a capacity of 350,000 Btu per hour and features clean, odorless operation with no visible flame.

Air is supplied by a furnace-type blower in place of a fan for positive air circulation and quiet operation. Fuel pump, blower, and motor are coupled direct, eliminating V-belts and possible slippage. A heavy-constructed fuel tank permits 16 hours of continuous operation, and longer when thermostat-equipped.

The Model H-3 is available with thermostat, low-fuel shutoff and flame detector, or as a manually operated heater.

For further information write to the White Mfg. Co., Inc., Dept. C&E, 1227 W. Beardsley Ave., Elkhart 7, Ind., or use the Request Card at page 18. Circle No. 89.



For more facts, use Request Card at page 18 and circle No. 340

Solid off-the-road tire gives smooth, easy ride

The Bearcat Tire Co. announces a new off-the-road tire for use on front-end loaders, cranes, and similar equipment.

Designated Grizzley, the tire is made of a new material known as homogenized Tough Flex. This material consists of virgin rubber and nylon set into the mold as a uniform mixture and requiring only two light, flexible wire bands for reinforcement. According to the manufacturer, the use of this new material makes possible a solid tire with a pneumaticlike

ride that protects equipment from shock. The Grizzley tire is puncture, cut, and abrasionproof even under heaviest loads, according to reports from the company.

The tires are designed to fit standard pneumatic rims of all popular makes of equipment and are easily mounted in minutes.

For further information write to the Bearcat Tire Co., Dept. C&E, 422 W. Garfield Blvd., Chicago 9, Ill., or use the Request Card at page 18. Circle No. 39.



REBUILDS TRACKS WITH VICTOR REBUILDER

for 1/3 the cost of new ones...



Victor TLM-2 track link rebuilder automatically hardfaces both sides of track simultaneously.



Victor DEMS roller and idler rebuilder mounts 8 rollers, advances from one roller to next between passes, thus preventing excessive heat build-up.

"New rails for a TD-24 cost about \$2200.00, but with our Victor track link rebuilder we can recondition a worn set to 90% as good as new for \$750.00," reports Allied Equipment Company, International Harvester dealer, Fresno, Calif. Speed helps to make these savings possible. "With our Victor, one man can rebuild a TD-14 track in 6 hours, floor-to-floor time—that's 5 times faster than non-automatic equipment."

Allied Equipment Company also uses Victor roller and idler rebuilder, roller and idler grinder, and flux grinder—all manu-

factured by L & B Welding Equipment, Inc., a wholly-owned Victor subsidiary, and sold only under the Victor name.

INVESTIGATE VICTOR TRACK REBUILDING NOW

Whether you're a dealer or contractor, you can profit from Victor automatic rebuilding machines — and Victor continuous-coil, hardfacing wire, developed expressly for use with automatic rebuilders. For complete details, call your Victor welding dealer, or write us today for descriptive literature.



VICTOR EQUIPMENT COMPANY

844 Folsom St., San Francisco 7 • 3821 Santa Fe Ave., Los Angeles 58
1145 E. 76th St., Chicago 19
J. C. Menzies & Co., Wholly-Owned Subsidiary

MFRS. OF HIGH PRESSURE AND LARGE VOLUME GAS REGULATORS; WELDING & CUTTING EQUIPMENT; HARDFACING RODS; BLASTING NOZZLES; COBALT & TUNGSTEN CASTINGS; STRAIGHT-LINE AND SHAPE CUTTING MACHINES; ROLLER AND IDLER REBUILDING MACHINES



The entire air output of the built-in 600-cfm compressor of this Schramm rig is utilized in the hole.

Blast-hole drilling rig is self-contained unit

A new and completely self-contained blast-hole drilling rig has been introduced by Schramm, Inc.

According to the company, the Rotadrill Model C66 mounts on a single self-propelled crawler all equipment necessary for drilling holes to the depths required in quarry and rock-removal operations.

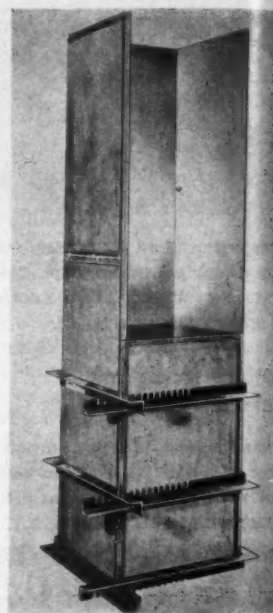
This rig is designed for one-man operation with all controls for drill-

ing and maneuvering conveniently located in the operator's cab on the work platform. A separate air compressor is not required since a 600-cfm unit is built into the rig.

The Model C66 is completely powered by hydraulics. A choice of two masts is offered, one with 25-foot and the other with 35-foot travel.

The entire unit can be carried on a low-bed trailer, and removal of the mast or other dismantling is not required.

For further information write to Schramm, Inc., Dept. C&E, 900 E. Virginia Ave., West Chester, Pa., or use the Request Card at page 18. Circle No. 21.



Announce form system for square columns

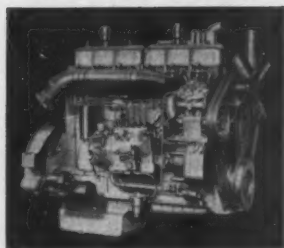
The Deslauriers Column Mould Co. announces a new square concrete-column form system said to substantially reduce forming costs.

This system is made up of three basic pieces—the column panels faced with heavy galvanized rustproof steel, the sturdy Econ-O-Clamps that square the forms, and the keys that quickly lock forms in assembled position.

The forms are light in weight and easy to handle. Steel surfaces are oiled to strip fast and produce a smooth concrete finish.

For further information write to the Deslauriers Column Mould Co., Inc., Dept. C&E, 5036 W. Lake St., Chicago 44, Ill., or use the Request Card at page 18. Circle No. 4.

MOST PRODUCTION with WAUKESHA POWER



A typical Waukesha medium six-cylinder Diesel. Other Diesel, gasoline, and gas models—up to 1200 hp.



For service—in any country—or any climate—stamina and dependability are built-in. Power packed—to pay profits in fast, smooth performance, fuel economy, and low upkeep—Waukeshas are the choice of operators and owners alike. Engine-Generator Sets (ENGINATORS®) for all standard fuels... from 50 to 800 KW.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN
Factories at Waukesha, Wisconsin, and Clinton Iowa New York • Tulsa • Los Angeles

For more facts, use Request Card at page 18 and circle No. 341

Information on any product can be obtained by circling the designated number on the card at page 18.

Asphalt surfacer resists gasoline spillage

A surfacer, resistant to petroleum spillage and used for sealing exterior blacktop surfaces such as airport runways, has been announced by the Consolidated Paint & Varnish Corp.

Called Goodyear Petroseal, it has an emulsion-of-tar base. In addition to being unaffected by gasoline, it is also said to resist the damaging effects of road salts, acids, grease, oils, water, and weathering.

Petroseal requires no heating for application, and it spreads easily to form a one-piece crackless coating. It can be applied with squeegee, fiber floor brush, or spray.

For further information write to the Consolidated Paint & Varnish Corp., Dept. C&E, East Ohio Bldg., Cleveland 14, Ohio, or use the Request Card at page 18. Circle No. 40.



"Exacting, Post-Stressing Job Required Dependable, Portable, INSTANT Contact... and SEISCOR TELEPATH really filled the bill!"

... said Floyd Oakley, head of Oakley Engineering Company, Tulsa.

The TELEPATH Miniature 2-Way Radio is one of many products engineered by Seiscor for short-range communications.

SEISCOR

A DIVISION OF SEISMOGRAPH SERVICE CORPORATION

Other products include: TELEPATH unit in a hard-hat, pocket-size 2-way radios, supervisory control stations, industrial wired communications units, RF signaling systems, and miniature 2-way radio base stations. Seiscor manufactures or can develop a complete short-range communications system for your needs. WRITE TODAY for Communications Requirements Data Sheet.

communications section

BOX 1590 TULSA, OKLAHOMA

For more facts, use Request Card at page 18 and circle No. 342

CONTRACTORS AND ENGINEERS

The new Talbert trailer, carrying a LeTourneau-Westinghouse Model B Fullpak scraper, features T-1 or equal high-strength steels in main frame members for more capacity with lighter weight.



35-ton-capacity trailer is lightweight unit

Talbert Trailers, Inc., offers a 35-ton-capacity level-deck trailer weighing only 10,050 pounds.

Designated Model T3L-35-PG-1-T-1, this trailer features rubber-mounted 3-axle spring suspension, tu-

bular axles, air brakes with full "S" cam, and 8 x 27-foot deck area.

For further information write to Talbert Trailers, Inc., Dept. C&E, 7050 W. 47th St., Lyons, Ill., or use the card at page 18. Circle No. 11.

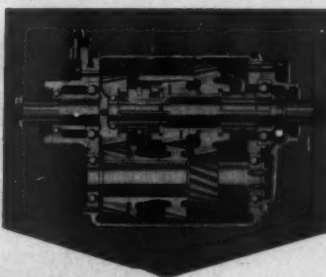
Power fastening tool designed for safety

Hilti, Inc., announces a new and safe power fastening tool for fastening into dense materials such as concrete, concrete block, and structural steel.

The Model DX 100L is designed to start the fastener in contact with the material, then push it in. This is accomplished by using a heavy hammer to hit the high-mass steel piston which contains a very light, slow-burning blank charge. There is no triggered gun action; thus shock and the possibilities of explosive spall, ricochet, and fishhooking are eliminated.

For further information write to Hilti, Inc., Dept. C&E, 73 Southfield Ave., Stamford, Conn., or use the Request Card at page 18. Circle No. 26.

For further information on any product described in this section circle the indicated number on the Request Card at page 18.



Specify FULLER Specify the MODEL

For heavy duty trucks and tractors specify the FULLER '92 SERIES 3-SPEED AUXILIARY

- High capacity
- Widest range of ratios
- Top-mounted power take-off optional
- Low initial cost, reduced maintenance
- Available from all truck manufacturers on specification

'92 SERIES (Heavy-Duty) RATIOS				
MODEL	DRIVE RATIO		REDUCTION	
	High	Inter-mediate	Low	
3-A-92	.74	1.00	2.09	
3-B-92	.84	1.00	1.24	
3-C-92	.75	1.00	2.64	
3-D-92	.75	1.00	1.24	
3-E-92	.84	1.00	2.09	
3-F-92	.84	1.00	2.64	
3-G-92	1.00	1.327	2.09	
3-H-92	1.00	1.327	2.64	

Specify  Specify the MODEL

FULLER MANUFACTURING COMPANY
(Transmission Division)
KALAMAZOO, MICHIGAN
Subsidiary EATON Manufacturing Company

For more facts, circle No. 345



Travelift
VERTICAL LIFT CARRIER



Travelift loads pre-cast concrete slabs to trucks, concrete with a model like this, thereby saving time, money and space.



Travelift is handling water main efficiently with 4 models like this for the greater Talman Water Board, Talman, Iran.



Travelift in New York, New York, carrying pre-cast concrete beams in long lots at Concrete Engineering Co. Ltd.



Travelift prepares for handling pre-cast beams with new models like this to be used in Peru, South America on the job with Utah Construction Co.

From Hawaii to Iran and Canada to Peru...all over America, too. Travelift's versatile lifting is solving many complex handling problems. Particular models launch, haul out, load and unload boats for storage, repair, rail or truck haul...handles finished steel and concrete products...railroad piggy-back trailers and containers.

ONE MAN CAN OPERATE

Steering, lifting and propulsion of the Self-Propelled Travelift are by hydraulics. Turning radius of the Travelift Carrier is short and maneuverability excellent.

Capacities to 100,000 lbs. or custom built to your needs.

Write for information:
TRAVELIFT & ENGINEERING, INC.
Dept. C&E, Morgan, Bay, Wisc.
Please send information on the Self-Propelled Travelift

Name _____
Address _____
City _____ State _____

For more facts, use Request Card at page 18 and circle No. 343

FINEST CARBON and ALLOY STEEL CASTINGS

by Farrell-Cheek

A HUGE LINE

Hardly a phase of U. S. construction is without the use or need of these products.



WRITE FOR THE CATALOGS YOU NEED!

- * CATALOG NO. 21—SPROCKETS
- * CATALOG NO. 22—WIRE ROPE FITTINGS (AND ACCESSORIES)
- * CATALOG NO. 23—CONVEYING NEEDS
- * CATALOG NO. 24—WHEELS AND ROLLERS
- * SPECIFICATIONS

Finest Name in Cast Steel!

We vouch for the design and production quality of our castings... and we vouch for the benefit they can be to your operation. However, you must become acquainted with F-C castings to best know how they can serve you.

PLEASE ALLOW US TO SEND YOU THOSE CATALOGS WHICH ARE OF PARTICULAR INTEREST. YOUR INQUIRY WILL BE GIVEN IMMEDIATE ATTENTION.

FARRELL-CHEEK STEEL COMPANY
103 LANE STREET, SANDUSKY, OHIO

OUR *Fiftieth* YEAR

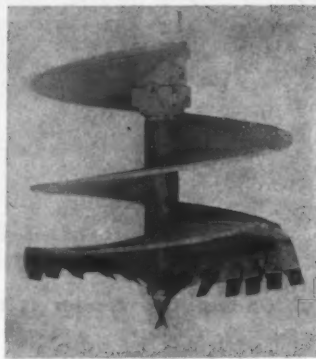
For more facts, use Request Card at page 18 and circle No. 344

Earth auger drills for extra-heavy duty

The AA Series 48 x 54-inch Pengo extra-heavy-duty earth auger is announced by Petersen Engineering Co., Inc.

The auger is available in a full range of sizes in diameters of 24 to 48 inches, in 54-inch lengths. These same sizes, plus a full range of sizes from 54 to 96 inches, are available in the twin helix type. All sizes use the same standard Pengo pilot bit and the new extra-strong No. 20A70 reversible forged Pengo "wisdom" tooth.

The new auger is designed for boring in coral, basalt, and other ma-



terials too severe for the types of Pengo augers and teeth in general use.

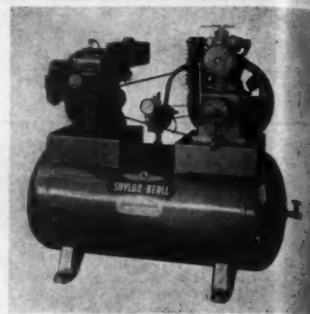
For further information write to

the Petersen Engineering Co., Inc., Dept. C&E, P. O. Box 330 A, Santa Clara, Calif., or use the Request Card at page 18. Circle No. 6.

Light-duty compressor mounts on any pickup

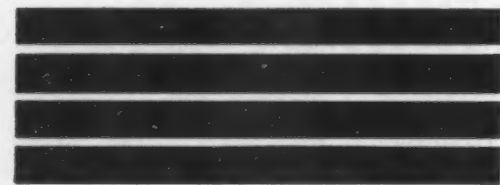
An 8-hp air compressor designed for mounting on any light pickup truck has been introduced by the Saylor-Beall Mfg. Co.

This compressor, designated Model UL-743-ES, is said to be ideal for tire service, as well as for greasing or painting or operating pneumatic tools. It has a maximum pressure of 175 pounds with a displacement of 23.8 cfm, and is available with 30, 60,



80, or 120-gallon tanks.

For further information write to the Saylor-Beall Mfg. Co., Dept. C&E, St. Johns, Mich., or use the Request Card at page 18. Circle No. 15.



To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

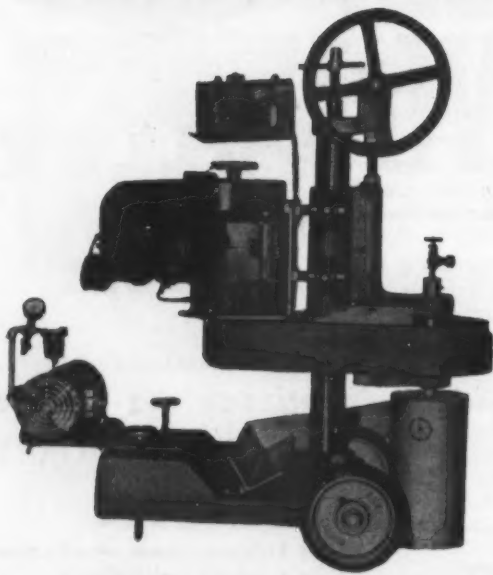
Land-clearing saw is powerful, lightweight

A heavy-duty brush cutter is offered by Hoffco, Inc.

Powered by a 4 1/4-hp engine, this rugged unit rips through heavy brush and weeds, and can slice trees up to 3 1/2 inches in diameter. For bigger timber, a chain-saw attachment (10 or 14-inch bar) is available.

The 31-pound unit is well balanced, and a strap-type harness distributes the weight to back and shoulders. The Powermatic thumb button gives fast, positive control, and rotating handle bars and all-position carburetor allow the unit to be rotated 360 degrees with the handles remaining upright for full control and safety.

For further information write to Hoffco, Inc., Dept. C&E, 411 N. Eighth St., Richmond, Ind., or use the Request Card at page 18. Circle No. 69.



INTRODUCING I

THE MOLCO MODEL III GASOLINE-POWERED DRILLING MACHINE

A machine which eliminates the challenge of those jobs having no adequate electrical facilities to provide power, or means to rigidly peg the machine down.

... New Power ... New Ideas ... By the engineers of the most experienced concrete drilling machine manufacturers, tempered by using them on time and job proven machines. Powered by a new Wisconsin 10 HP 3600 RPM gasoline motor ... Equipped with a vacuum plate and heavy duty vacuum pump to provide a holding pressure of 5,000 pounds. This means faster bit penetration and longer bit life providing overall job economy.

A hard to beat combination on rugged jobs.

YOUR POWER SUPPLY IS ALWAYS WITH YOU!

MOLCO
DRILLING MACHINES, INC.
909 FRANKLIN ST., N. E.
WASHINGTON, D. C. DE 2-7795

For more facts, circle No. 346

EFCO Steel Forms available with RETURN OPTION

Satisfaction is guaranteed when you purchase EFCO Lifetime Steel Forms for your concrete forming needs.

NEW CATALOG

Describes and illustrates EFCO Steel Forms and accessories with examples of many uses. Send coupon for your copy.



MAIL TODAY

Economy Forms Corp.
Box 128-E, H. P. Station
Des Moines, Iowa

Please send new catalog on EFCO Steel Forms, and address of nearest sales office (there are 29 coast to coast).

Name _____
Firm name _____
Address _____
City _____ State _____

For more facts, use coupon or circle No. 347

45 LEVER TYPE

models to choose from!

THE WORLD'S MOST COMPLETE LINE

SIMPLEX LEVER JACKS



SINGLE ACTING, RATCHET LOWERING

11 Models, 5 to 20 tons capacity. Full capacity on toe or cap.



EMERGENCY & BRIDGE JACKS

2 Models, 15 tons capacity. Pivot on base.



POLE PULLING & STRAIGHTENING JACKS

3 Models (One aluminum alloy) 5 to 15 tons capacity. Standard of Bell System.



REEL JACKS

3 Models (One Aluminum alloy) 5 to 10 tons capacity. "T" Base.



GEARED JACKS

3 Models, 25 to 35 tons capacity. Side toe lift.



MINE TIMBER JACKS

4 Models (One has trip mechanism). Single and double acting.



TRACK (TRIP) JACKS

13 Models (Five aluminum alloy) Single and double acting.



BELT TENSIONING JACK

5 ton capacity.

Also Lever type, Cable & Wire Tensioning, Pipe Pushing & Pulling, Tie Remover, Tie Replacer, and Siding & Flooring Jacks.

Look for further information on Hydraulic and Screw Jacks in other advertisements.

TEMPLETON, KENLY & CO.
2511 GARDNER ROAD
BROADVIEW, ILLINOIS

For more facts, circle No. 348

CONTRACTORS AND ENGINEERS



Designed to carry a 50,000-pound payload, the Ravens Tri-Axle unit weighs only 10,900 pounds. It has a 34-yard box and an all-aluminum frame.

Aluminum trailer carries 25 tons

A new triple-axle dumping trailer with a 25-ton capacity has been introduced by Ravens-Metal Products, Inc.

Constructed of aluminum, the unit weighs 10,900 pounds. It has 12 tires and a 34-cubic-yard-capacity box.

The aluminum box of a typical Ravens Tri-Axle is 27 feet long, with 56-inch-high sides. The all-aluminum frame is 31 feet x 18½ inches

deep beam. The floor is of 3/16-inch plate, the sides of 5/32-inch plate. Dumping is achieved by a Commercial hoist with 9-inch diameter and 22.0-inch stroke.

For further information write to Ravens-Metal Products, Inc., Dept. C&E, 1300 Market St., Parkersburg, W. Va., or use the Request Card that is bound in at page 18 of this issue. Circle No. 100.

the fastest,
safest and
surest way to...

a Leakproof
Hose
Connection

PUNCH-LOK
HOSE CLAMPS

See Your Distributor
or write direct for catalog and prices



The Sign of a GOOD Hose Clamp

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Dept. J, 321 North Justine Street, Chicago 7, Illinois

For more facts, circle No. 349

NOVEMBER, 1960

FOUR NEW ACKER CATALOGS FREE

THESE COLORFUL NEW CATALOGS ILLUSTRATE AND
DESCRIBE EVERY TOOL AND ACCESSORY YOU NEED.



WRITE FOR YOUR FREE COPIES
TODAY!

ACKER DRILL CO., INC. P. O. BOX 830 • SCRANTON 2, PA.

Please rush literature checked:

- ☐ Bulletin 10—Diamond Bits & Core Barrels
- ☐ Bulletin 11—Drill Supplies
- ☐ Bulletin 12—Soil Sampling Equipment
- ☐ Bulletin 13—Auger Tools

C&E

NAME _____ TITLE _____
COMPANY _____
STREET _____
CITY _____ STATE _____

For more facts, use coupon or Request Card at page 18 and circle No. 350

ONLY CROSBY-LAUGHLIN HOOKS

DO WHAT THEY SAY
SAY WHAT THEY DO

Load-Rated®

- GUARANTEED NOT TO BREAK
- WIDEST CAPACITY RANGE
- EASILY CONVERTED TO SAFETY HOOK

Ask your distributor for
complete line catalog



CROSBY-LAUGHLIN Division

FT. WAYNE, INDIANA

Forged Fittings For Wire Rope and Chain

For more facts, use Request Card at page 18 and circle No. 351



Heaters remove ice, snow for hopper-car loading

Electric radiant heaters for quickly removing ice, snow, and frozen residual material from railway hopper cars are available from Radcor, Inc.

Designated Model RUC-32, the heaters—used in pairs—are placed between the rails so as to be directly under the cars. Each unit has a maximum capacity of 32 kilowatts, 240 volts, 3-phase, and contains 16 alloy-sheath Chromalox heating elements having threaded-end fittings.

For further information write to Radcor, Inc., Dept. C&E, Bradner, Ohio, or use the Request Card at page 18. Circle No. 99.

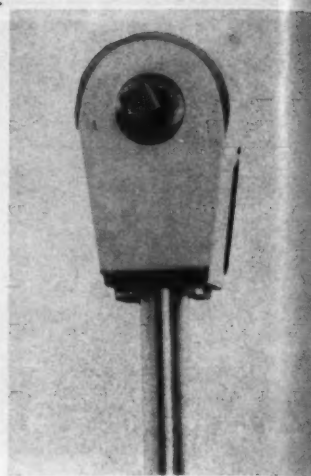
Manual impact wrench for tough bolting jobs

The Swench wrench, a compact and completely self-contained hand-operated, ratchet-type impact wrench designed to handle the toughest bolting jobs, is offered by the Curtiss-Wright Corp.

The Swench uses automatically delivered, spring-actuated, rotary hammer blows, or impacts, to produce magnification of the torsional force manually applied to the handle. It can be used to loosen a frozen nut or

be switched immediately to the task of tightening a bolt to desired tension with greatly reduced manual effort. It also improves safety, increases the range of bolt sizes that can be handled by one wrench, and needs no power supply or auxiliary equipment.

For further information write to the Curtiss-Wright Corp., Marquette Division, Dept. C&E, 1145 Galewood Drive, Cleveland 10, Ohio, or use the Request Card at page 18. Circle No. 81.

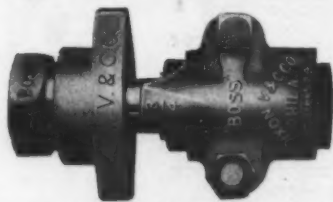


Reliability THAT ASSURES Lower Drilling Costs!



"GJ-BOSS"

AIR HAMMER COUPLING



The washerless coupling for all heavy-duty air hose connections to hand drills, wagon drills, drifters, jumbos. Famous for strength, durability and efficiency. Quickly connected and disconnected, with no lost or worn-out washers to replace. Compact and Heavy Types.

"BOSS" Air Hammer Coupling—same as above except Washer Type.

For lighter services—"GJ-Dixon" and "Dixon" Air Hammer Couplings.

"BOSS" Self-Honing AIR VALVES

Used for the efficient control of air on compressors, manifolds, headers, sump pumps, etc. Strong, durable, compact. Self-adjusting, quick-opening, full flow. Male or female I.P.T.



Bronze plug automatically hones to perfect seal against harder metal of valve body.

Stocked by Manufacturers and Distributors of Industrial Rubber Products

DIXON Valve & Coupling Co.

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DIXON VALVE & COUPLING CO. LTD., TORONTO, CANADA
DIXON Valve & Coupling Co. is a subsidiary of the Curtis-Wright Corp., New York, N.Y.

For more facts, circle No. 352

MUSCLES under the mainline!

Rodgers Hydraulic Jacks

push three 88 foot tiles under railroad without disrupting traffic

Two 200 Ton Rodgers Hydraulic Jacks were selected by W. J. Irwin & Sons, Inc., Tonawanda, N. Y. for driving three sewer pipes of 96" I. D. reinforced concrete tile 88' under the mainline of the New York Central Railroad. Part of a 2½ million dollar sewer contract on the Tonawanda West Side Drainage Project, the "push pipe" method was preferred because it permitted unrestricted use of the rail right-of-way overhead.

TIME: 34 DAYS—Actual jacking time consumed 34 days based on three-eight hour shifts a day. Each sewer took eleven 8-foot tile sections. The *First Line* required 14 days; the *Second Line* 11 days and the *Third* only 9 days.



JACKING PROCEDURE—A service pit 28' deep by 22' wide by 40' long was excavated to house the jacking equipment. A pair of 75 lb. steel rails placed on the concrete pit floor cradled the tile sections and acted as a guide for the jacking operation. Type of soil encountered in all three pipes was a mixture of heavy yellow and blue clay.

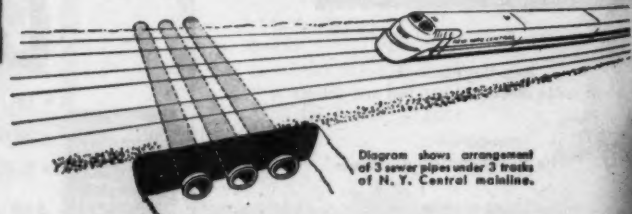
EQUIPMENT USED—Two 200 Ton Rodgers Hydraulic Jacks with 48" ram travel were powered by a Rodgers Model D2 electric driven hydraulic pump located at the top of the excavation pit. A valve panel located at the bottom of the pit permitted accurate control of the jacking operation.



Steel rails cradle tile sections as twin Rodgers Jacking Cylinders press against the wooden jacking frame. Heavy grease on outside of tile cuts down friction—for easier sliding.

Rear of excavation pit showing Hydraulic Jack against abutment wall. At this stage the ram is extended approximately 1/3 of the 48" ram travel.

ADVANTAGES OF HYDRAULIC JACKING—This job was handled at low cost and was unique due to the short time required for completion and the fact that rail service overhead continued uninterrupted throughout the tunneling project below. Entirely different from conventional tunneling, the "push pipe" method also provides greater safety to workers from cave-ins since they work inside the tile that is being driven.



If you'd like more details about this job, write for free copy of Bulletin 331.

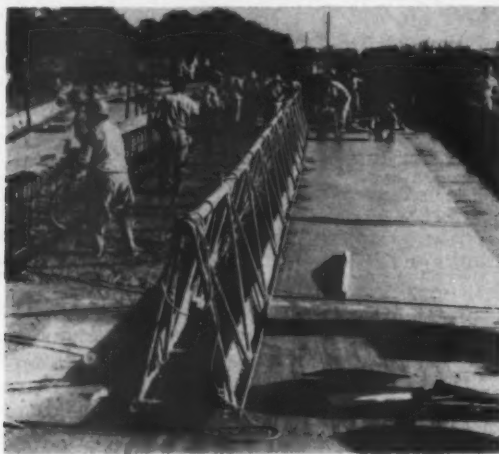
Rodgers Hydraulic Inc.

7415 Walker St. • Minneapolis 16, Minnesota

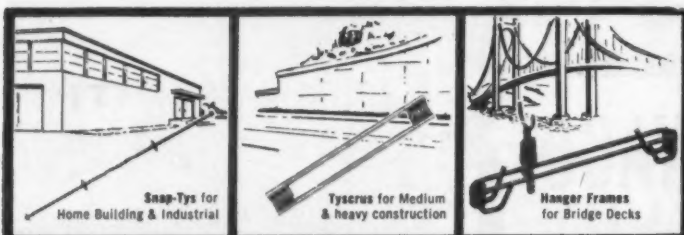


For more facts, use Request Card at page 18 and circle No. 353

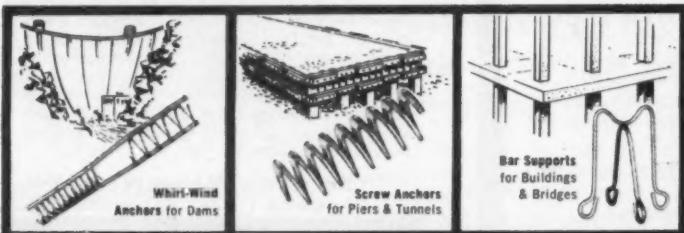
CONTRACTORS AND ENGINEERS



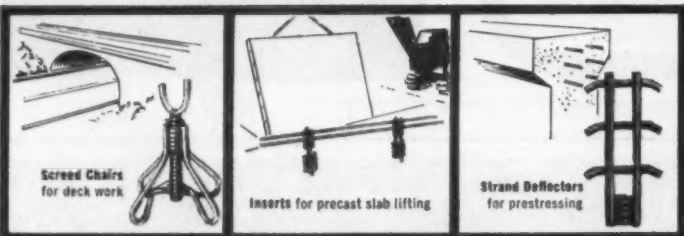
Designed primarily for bridge and overpass road construction, the Yaun screed packs and settles concrete around steel reinforcing rods, while shaping the crown and slope of the roadway at the same time. These lightweight screeds are built to meet the customer's specifications, both in over-all length and thickness. For further information write to the Yaun Mfg. Co., Inc., Dept. C&E, 2120 N. Third, Baton Rouge, La., or use the Request Card at page 18. Circle No. 93.



For every kind of concrete construction



there's a dependable Richmond product!



Richmond has learned, through years of practical experience and research, how to design and produce the most effective and economical form ties, anchors, inserts and accessories for every conceivable kind of concrete construction.

All Richmond-engineered products, and there are more than 400 in the complete line, are designed to provide the extra strength that assures a safe, dependable forming job while saving time and money.

In addition, Richmond's field representatives and Technical Department can help you with any problem you might encounter in planning your form work... and will provide you with estimates, "take-offs" and material specifications on request.

Richmond's line of laboratory-tested form ties, anchors, inserts and accessories is the largest—in the field. It provides you with one source for all your concrete forming needs... ask for, and insist on "Richmond".

For complete information about Richmond's full line of quality products for concrete construction—or assistance with any specific concreting problem, write to:—



Main Office: 818-838 LIBERTY AVENUE, BROOKLYN 8, N. Y.
Plants & Sales Offices: Atlanta, Georgia; Fort Worth, Texas; St. Joseph, Missouri. In Canada: ACROW-RICHMOND LTD., Orangeville, Ontario.

For more facts, use Request Card at page 18 and circle No. 357

Sliding choker hooks available in four sizes

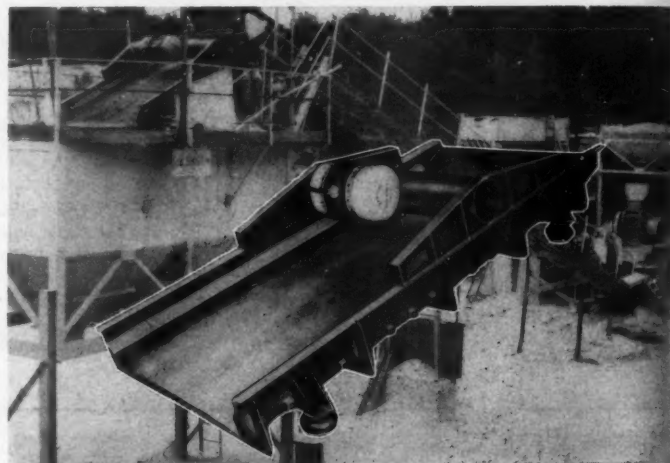
Qualities of safety, long life, and high strength without excess weight are incorporated into a new sliding choker hook manufactured by the Crosby-Laughlin Division of the American Hoist & Derrick Co.

According to the company, the sliding choker hooks are drop-forged and heat-treated for greatest possible strength, have a wide throat to accommodate heavy thimbles, and are load-rated for safety. The sleeve-and-eye design insures free movement on

the wire rope, allowing quick, smooth adjustment for all sizes of loads.

Light in weight for safer, easier handling, the sliding choker hook is available in four sizes, with a safe working load capacity ranging from 2,500 to 8,000 pounds.

For further information write to the American Hoist & Derrick Co., Crosby-Laughlin Division, Dept. C&E, Box 570, Fort Wayne, Ind., or use the Request Card that is bound in at page 18. Circle No. 78.



SYNTRON VIBRATING SCREENS for efficient high-capacity screening

SYNTRON builds a vibrating screen for almost every screening need.

SYNTRON Vibrating Screens have been tested and proven in many sand and aggregate processing applications—sizing, dewatering, media recovery, wet and dry sizing and fine screening. Uniform quality control screening means consistently high quality products.

SYNTRON Screens offer efficiency, dependability and low maintenance for better screening, higher capacity at lower cost.

Write for the catalog section on Vibrating Screens

SYNTRON COMPANY

227 Lexington Ave.

Homer City, Penna.

Other SYNTRON Equipment of proven dependable Quality



GASOLINE HAMMERS



VIBRATING FLOATS



CONCRETE VIBRATORS

For more facts, use Request Card at page 18 and circle No. 358

CONTRACTORS AND ENGINEERS

Push-type welding gun and wire feeder



New Airco welding unit.

A new air-cooled push-type welding gun and wire feeder for use with the gas-shielded metal-arc (Airco-matic) welding process is available from Air Reduction Sales Co. of New York City.

The unit is said to have particular value on applications requiring ruggedness and high-duty cycle. The gun, Model AH60-B, has a 60-degree

gooseneck nozzle assembly for welding in hard-to-reach places, and a level-type trigger for ease of operation. It can be used with buried arc welding and spray arc welding using carbon dioxide as a shielding gas, or standard gas-shielded metal-arc welding (Aircomatic) using argon as a shielding gas.

The wire feeder includes a remote speed control with 15 feet of service cord to provide wire-feed speed adjustment, up to 600 inches per minute, near the work. Operating on 115 volts, 60-cycle ac, the feeder (Model AHF-D) can be used with either constant arc voltage or filler arc motor generator power sources.

For further information write to the Air Reduction Sales Co., a division of Air Reduction Co., Inc., Dept. C&E, 150 E. 42nd St., New York 17, N. Y., or use the Request Card that is bound in at page 18. Circle No. 25.

New-type power takeoff added to equipment line

The Clark Equipment Co.'s Automotive Division offers a new type of power-takeoff unit that can deliver 70 horsepower without requiring

changes in other power-train components.

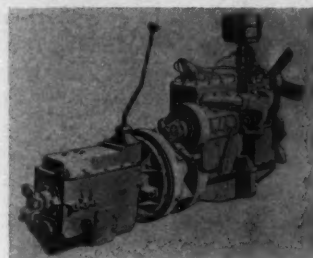
Designated Model P-200 flywheel power takeoff, the unit bolts to the

engine flywheel housing, and thus is ahead and independent of the clutch and transmission.

The takeoff is readily adapted to any gasoline or diesel engine with either SAE No. 2 or SAE No. 3 bell housings. It adds only 8 inches to the power-train lengths. Two speed ratios—1.27:1 and 1:1—are available in standard models.

Power is transmitted from the engine to the vehicle clutch and transmission by a shaft running the length of the takeoff unit and through a gear train to the power-takeoff output shaft.

All gears are quiet-running helical types. Lubrication is self-contained, and built-in vibration dampening

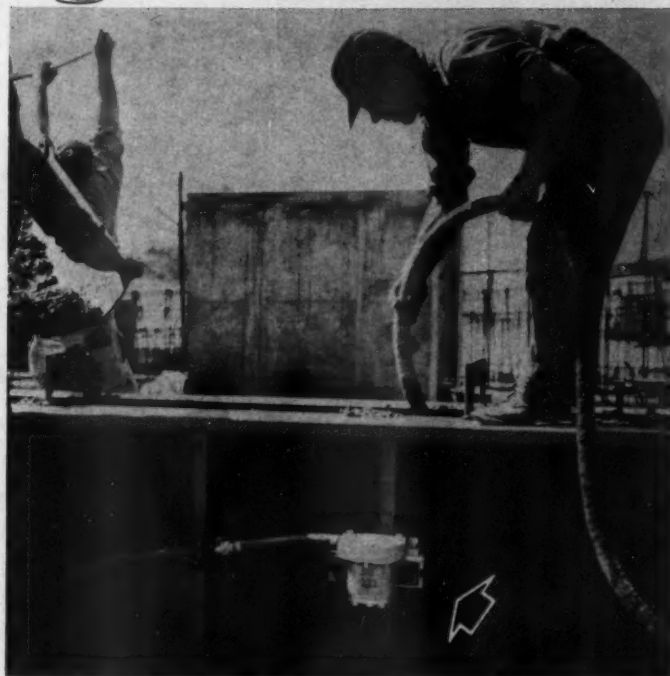


prevents transmission of torsional impulses to the drive.

For further information write to the Clark Equipment Co., Automotive Division, Dept. C&E, Jackson, Mich., or use the Request Card at page 18. Circle No. 54.



**Just 1½ oz. of oil
...LASTS A MONTH!**



Viber internal and external vibrators in use in prestress yard. Photo shows Model TV5 external vibrator on form.

NEW TURBOVIBER®
...fast, powerful vibration for

- concrete pipe • prestress • precast
- tunnel lining and related applications

One simple turbine rotor—no vanes or cylinders, no sliding friction—supplies the power for the new Viber TurboViber. Exceptionally high frequency of 10,000 rpm or more exerts impact action of well over a ton.

No motor lubrication ever! No line oilers required! Only a few cents worth of oil lubricates sealed eccentric for a month or more under normal operating conditions. Fewer parts mean simplified servicing and longer life with drastically reduced operating costs. Five different mountings make attachment easy for any job application.

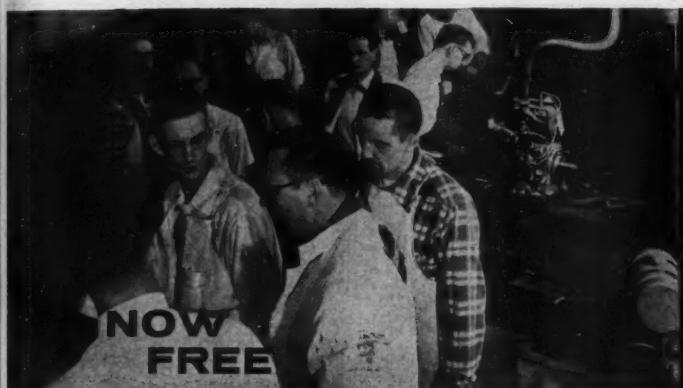
See your Viber dealer now! Or write for details on how new TurboViber can do a better external vibrating job at lower costs to you in maintenance savings alone! Viber Company, 726 South Flower Street, Burbank 22, California.



PIONEERS AND LEADERS IN THE MANUFACTURE OF VIBRATORS

Viber Vibrators

For more facts, use Request Card at page 18 and circle No. 360



NOW FREE TO ALL MECHANICS

WISCONSIN ENGINE SERVICE CLINICS

That's right: It doesn't cost you one red cent to enroll yourself and/or your mechanics in Wisconsin Engine Service Clinics. Nor are there any strings attached. The only requirement is that you want to keep your Wisconsin-powered equipment in tip-top ready-to-use condition.

You can count on this: A Wisconsin Field Service Clinic is not a sales promotion pitch or gimmick. It's a down-to-earth service school for service men!

You and/or your men will be taught by factory-trained and field-educated engine experts. You will be schooled in the latest Wisconsin Engine design and construction — in short-cuts in trouble-shooting. You will be instructed in proven procedures of engine overhaul and maintenance. This thorough training means more job time, less downtime for your Wisconsin-powered equipment in the coming months.

One or more clinics may be held in your area during the coming year. They're popular—so enroll your men now by mailing the handy coupon.



WISCONSIN MOTOR CORPORATION

MILWAUKEE 46, WISCONSIN

World's Largest Builders of Heavy-Duty Air-Cooled Engines

USE THIS COUPON for reservations in future clinics

PRODUCT EDUCATION DEPT.
WISCONSIN MOTOR CORPORATION
DEPT. C-20, MILWAUKEE 46, WIS.

Please let us know when and where your next Field Service Clinic will be held. We would like to make . . . reservation (s).

Name.....

Company.....

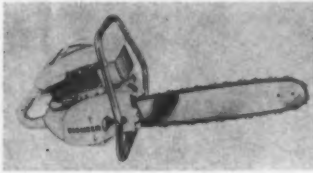
Address.....

We use the following Wisconsin-powered equipment.....

Q-349

For more facts, use coupon or Request Card at page 18 and circle No. 359

Two new chain saws are rugged, lightweight



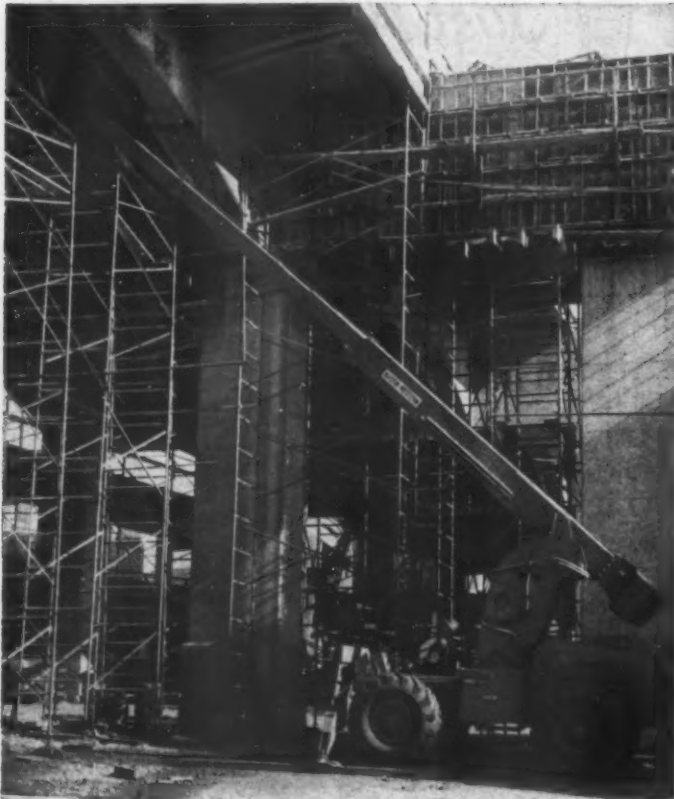
Pioneer Chain Saws introduces two new models—410 and 610—with a full line of attachments.

The Model 410 is a continuation, with improvements, of the Pioneer 400 series, and is constructed of lightweight, extra-tough, weldable aluminum alloy. It has a 2-stroke, 1-

cylinder piston engine designed for maximum power, and features the new, improved Insto-Primer, which injects fuel into the firing chamber.

The Model 610 has latest modifications and is constructed of the same aluminum alloy as the lighter model, but it features larger engine components while retaining qualities of easy handling.

For further information write to Pioneer Chain Saws, Outboard Marine Corp., Dept. C&E, Waukegan, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 62.



A-W cranes reach 'hard-to-reach' places on S. F. Bay Bridge job

Peter Kiewit Sons chose an 11-ton Austin-Western Model 410 hydraulic crane for a difficult concrete handling application on a \$1,572,000 San Francisco-Oakland Bay Bridge contract.

Telescoping Boom

It was chosen for its maneuverable all-wheel steering and low overhead requirements, which permitted it to work under the lowest point (15 ft.) on the job. Yet its boom, which telescopes from 25 to 48 ft., had the required length to reach work platforms almost 50 ft. above the ground. This live-acting boom easily lifted and "threaded" buckets of concrete through small openings in a maze of scaffolding. A 7-ton Model 210, with

shorter 35-ft. reach, was also used.

Equipped with a personnel platform attachment, the cranes quickly and safely raised men to their working positions. They were also used for other tasks, involving hard-to-reach places, such as chipping concrete, demolition work on old support columns, and removing concrete forms.

Lift, carry or place

Hydraulic cranes are available in five models, 5 to 11-ton-capacity ranges. Self-propelled or stationary; wide range of optional attachments. Why not get facts and figures on these versatile rigs today. Contact your nearby Austin-Western distributor or write to our Aurora address.

Austin-Western

CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.
BALDWIN • LIMA • HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

For more facts, use Request Card at page 18 and circle No. 361



New portable drill is multipurpose unit

The new Minuteman portable drill announced by Mobile Drilling, Inc., is a compact, multipurpose, rotary unit designed for subsurface exploration and production drilling in soils, rock, and concrete.

According to the manufacturer, the Minuteman handles continuous-flight augers from 3 to 12 inches in diameter and drives 6-inch-diameter augers to 30-foot depths. When equipped for core drilling, it drives "EW" core barrels to 200 feet. Also, when equipped for masonry drilling, it cuts 1 to 8-inch-diameter cores from steel-reinforced concrete in standard lengths.

The Minuteman weighs only 150 pounds, yet offers such features as a 6-hp engine, 8-speed automotive transmission, diaphragm-type carburetor for drilling at any angle, 44-inch stroke with power or hand feed both in and out of the hole, wheel-mounted base for easier handling, and 2-



point anchoring for maximum stabilization in soils, rock, or concrete.

For further information write to Mobile Drilling, Inc., Dept. C&E, 1244 N. Cornell Ave., Indianapolis 4, Ind., or use the Request Card at page 18. Circle No. 23.

Gun for gas-shielded metal-arc welding

A new manual unit, consisting of Aircomatic welding MIGet gun and controls, has been developed by the Air Reduction Sales Co.

The gun and controls are designed for use in light to heavy fabrication.

The MIGet gun carries its own compact reel of wire, wire-feeding



HAULING PROFITS UP with Rockford Spring-Loaded Clutches

Rockford Clutch equipped trucks move thousands of tons of limestone per day in construction and quarrying work.

Here, higher power means higher profits. That's exactly what you get with Rockford Spring-Loaded Clutches — positive, full-motion driving power with cushioned starts and controllability.

These rugged clutches are also used on haulers, loaders, graders, tractors and other vehicles where the clutch is in constant use.

Write today for illustrated brochure.



ROCKFORD SPRING-LOADED CLUTCH

ROCKFORD CLUTCHES

ROCKFORD CLUTCH DIVISION

BORG-WARNER



314 CATHERINE ST.
ROCKFORD, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 362

Export Sales
Borg-Warner International
36 So. Wabash, Chicago, Ill.

CONTRACTORS AND ENGINEERS

Product Parade—THESE PRODUCTS CAN HELP WIDEN YOUR PROFIT MARGIN

drive rolls, and complete-range wire speed control in the gun itself. The operator can weld as far as 50 feet away from the control panel. The control panel, in turn, can be placed 150 feet distant from the power source.

The gun, weighing about 2½ pounds, is rated at 300 amp dc reverse polarity at 100 per cent duty cycle using argon or helium as a shielding gas; and at 300 amp dc reverse polarity using carbon dioxide.

For further information write to the Air Reduction Sales Co., a division of Air Reduction Co., Inc., Dept. C&E, 150 E. 42nd St., New York 17, N. Y., or use the Request Card at page 18. Circle No. 46.

Interchangeable valves for off-highway tires

Large-bore swivel valve-extension assemblies and interchangeable tube and tubeless spuds designed to increase rim adaptability of off-highway vehicles are available from A. Schrader's Son.

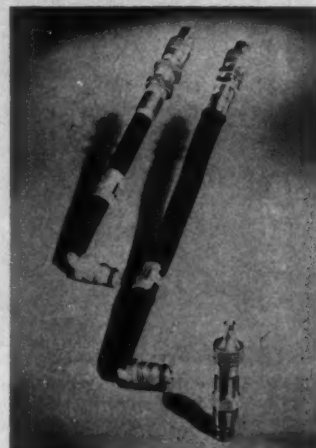
These valve-extension assemblies fit both the tube and the tubeless-tire valve spuds enabling rapid interchange between tubeless and tube operation with only one rim alteration. In converting to tube tires, the original tubeless valve hole is sealed with a Schrader rim-hole plug, and a new hole is counterbored and drilled on or near the rim base center to install

the new tube valve spud.

Extensions are available in lengths ranging from 2½ to 30 inches.

For further information write to A. Schrader's Son, a division of the Scovill Mfg. Co., Dept. C&E, 470 Vanderbilt Ave., Brooklyn, N. Y., or use the Request Card at page 18. Circle No. 16.

Schrader valve-extension assemblies are stocked in five popular lengths to meet most service conditions and all standard wheel installations. The interchangeable valve spuds and extensions reduce down time and cut replacement-valve inventory.



GIANT SALE!

CONSTRUCTION EQUIPMENT FROM MAMMOTH TRINITY DAM PROJECT

CALIFORNIA

Liquidating \$14,000,000.00 worth of well-maintained, top name equipment at BARGAIN PRICES!



CONVEYOR SYSTEM

2 miles long, 42" wide rubber belt. 9 flights, available individually, ranging from 672 ft. long to 1885 ft. long. Braking by electric motors acting as generators under belt load; also mechanical brakes. System includes drive-over hopper loading station for scraper discharge, screening and crushing plant, three drive-under terminal bins with total capacity of 1500 cu. yds.



SHOVELS AND CRANES

2—Model 150B Bucyrus Erie 6 cu. yd. Electric Shovel and Dragline (Note: 8 cu. yd. Dippers w/handles available for above); 1—Model 120B Bucyrus Erie 5 cu. yd. Electric Shovel and Dragline; 1—Model 38B Bucyrus Erie 1½ cu. yd. Shovel, Dragline, Backhoe, diesel; 1—Model 22B Bucyrus Erie ¾ cu. yd. Shovel, Dragline, Backhoe, diesel.



MOTOR PATROL

9—Model 12 Caterpillar Motor Patrols, 8T, 80D, 70, and 71D Series.



HAULING UNITS

8—Model LRVX Mack Tractors w/Model 137W Euclid 30 cu. yd. Bottom Dump Trailers powered by NVH-12-B1 Cummins Engines; 10—Model FH95AC International Pay-hauler Tractors w/Model PW20 30 cu. yd. Athey Bottom Dump Trailers.



END DUMP EUCLIDS

5—Model 46TD Euclid End Dump Units, 15 cu. yd., powered by Model NHRBIS Cummins Engines; 10—Model 63TD Euclid End Dump Units, 15 cu. yd., powered by Model 6-110 GMC Engines.



LOADERS

1—Model 175ADS Michigan 3 cu. yd. loader powered by Model 135DKBS Waukesha Engine; 1—Model D4 Caterpillar Loader w/Model EA4 Trackson Loader.



QUARRY DRILLS

15—Model D9 Caterpillar Tractors w/P.C.U.'s and Dozers, 18A Series (Note: 4—Ateco Hydraulic Rippers available for above); 21—Model D8 Caterpillar Tractors w/P.C.U.'s and Dozers, 14A Series (Note: 6—Caterpillar 28 Hydraulic Rippers available for above).

CRAWLER TRACTORS



RUBBER TIED TRACTORS

30—Model DW20 Caterpillar Tractors w/Model 456P Modified Scrapers, 67C and 88E Series; 10—Model DW20 Caterpillar Tractors w/Model PW20 Athey Wagons, 88E Series; 2—Model 33LDT Euclid Tractors w/Model 32SH Scrapers.

QUARRY DRILLS

1—Model TWM2A Joy Quarry Drill w/T500 Drills, pneu. tires; 3—Model TWM-5 Joy Quarry Drills w/T500 Drills, pneu. tires.

SEMI-TRUCKS

1—3400 gal. Model CF523C6 Kenworth powered by Model NRT6B1 Cummins Engine; 1—3400 gal. Model R1F402 International powered by Model NHRBIS Cummins Engine; 1—3600 gal. Model RDF192A International powered by Model JBS600 Cummins Engine; 2—6000 gal. Model 46TD Euclid powered by Model NHRBIS Cummins Engine.



QUARRY DRILLS



SEMI-TRUCKS



DUMP TRUCKS

5—4 yd. Dumpcrates mounted on International truck.

ALSO:

AIR COMPRESSORS • PUMPCRETE MACHINES • BATTERY LOCOMOTIVES • TRUCKS • PICKUPS AND JEEPS • WELDERS • LIGHT PLANTS • HOUSE TRAILERS • PUMPS • AIR TOOLS • ELECTRIC TOOLS • HOSE • PIPE • TANKS AND OTHER EQUIPMENT

All equipment kept in peak condition by elaborate preventive maintenance program. Choose from vast inventory while selection is complete. WRITE, WIRE OR PHONE FOR SALE PRICES OR TO ARRANGE A VISIT TO SALES YARD!

TRINITY DAM CONTRACTORS A JOINT VENTURE
10 WEST ORANGE AVENUE • SOUTH SAN FRANCISCO, CALIF. • PLAZA 6-0300, EXTENSION 279

SALES YARD • REDDING, CALIFORNIA

Eastside Road at South end of Redding
Phone CH 4-1024

For more facts, use Request Card at page 18 and circle No. 363

SWENSON the Summer-Winter Spreader...



U. S. Army Photograph

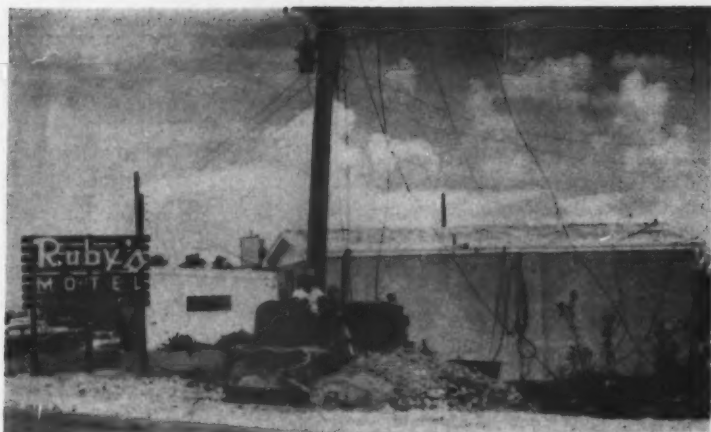
for resurfacing and ice control

Spread sand, gravel, salt, calcium chloride, cinders or any combination of these materials. Clutch-controlled from cab of truck. Any desired rate-of-flow. Steady or intermittent up to 30 M.P.H. Narrow strips or full traffic lanes. Forward or reverse. Models to fit any dump-truck box. Chain or hydraulic drive. Speed summer construction jobs, dust control, soil stabilization. Handle winter ice-control problems faster, safer, more efficiently. Write for complete information.



SWENSON SPREADER
LINDENWOOD, ILLINOIS

For more facts, circle No. 364



RIGS WERE ON THE JOB to repair damage and restore communications and utility lines the day after Hurricane Donna lashed the Florida Keys. The Allis-Chalmers HD-6 tractor-doser is grading and compacting coral limerock fill along the Overseas Highway in Marathon, where shoulders were washed out to a depth of 3 feet. The 40-



foot gap in the Tea Table relief bridge—caused by a runaway barge—is spanned by a Bailey bridge, airlifted from Fort Campbell, Ky. and constructed by Army engineers in 3 days. The contractor for the new bridge has a barge-mounted crane retrieve a concrete pile that had been knocked out.

Synchro-Start FULL AUTOMATIC ENGINE CONTROLS

FOR GASOLINE DIESEL & GAS ENGINES

Synchro-Start's new protective engine controls have been designed, for the starting and stopping of engines from remote pilot devices, such as pressure switches, float switches, power failure relays, etc., and are completely automatic in operation.

These dependable controls are encased in a steel, dust proof cabinet, and now feature enclosed PLUG-IN RELAYS as well as OVERLOAD BREAKERS. The plug-in relays simplify what little field maintenance that may have been required in older models, while the overload breakers eliminate the necessity of replacing fuses.

In designing this unit we have used the same high quality materials and workmanship that our customers have come to expect throughout Synchro-Start's 27 years of manufacturing engine controls.

SYNCHRO-START PRODUCTS, INC.
Since 1932
8151 NORTH RIDGEWAY AVENUE • SKOKIE, ILLINOIS

For more facts, circle No. 365



MODEL H10 (ABOVE)

Gasoline-powered unit especially designed for surfacing concrete highways, runways, streets, floors. Includes exclusive power takeoff for attaching "BERG" flexible shaft surfacing equipment.

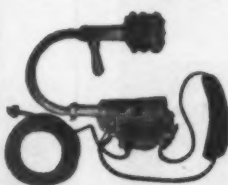
WIRE OR WRITE
FOR DETAILS . . .

CONCRETE SURFACING MACHINERY CO.
4665 SPRING GROVE AVE. CINCINNATI 32, OHIO

For more facts, circle No. 366

"BERG" CONCRETE SURFACERS

For Surfacing:
Bridges, Highways,
Airport Runways, Dams,
Culvert, Floors, Walls.



MODEL A (ABOVE)

Lightweight, electric-powered unit that suspends from operator's shoulder. Equipped with interchangeable heads and attachments for surfacing bridges, buildings, dams, culvert, walls or similar surfaces.

COMMENT from the BUTLER ENGINEER Of Two Fantastic World's Records

They don't have a concrete highway batching competition at the Olympic Games, but they should — because the BUTLER BIN TX-4 would win it — with all others biting dust. (Cement, sand and aggregates — that is.)

On highway 31 near Mackinaw City, Mich. on August 11, Denton Const. Co., laid 7250 lineal feet, of 24 foot wide pavement, 9 inches thick in 12 hours with 4 pavers and a Butler TX-4 Batching Plant. That's a batch every 12 seconds . . . a new world's record. Even the Russians admit it.

Then on August 25 Denton took another hitch in his belt and did 8,036 lineal feet — also 24 feet wide, 9 inches thick, in 12 hours. That is 3,898 batches — again of course, through his 4 bin Butler TX-4 with 4 batchers on each bin.

Each batch consisted of 728 pounds of cement, 1586 pounds of sand, 1532 pounds of fine stone, and 1512 pounds of coarse stone. Take cement for example: 26,300 barrels in the 12 hours. That's the equivalent of 66 railroad carloads.

Denton had one cement elevator and two blower delivery trucks.

Obviously that's another world's record — the third Denton has racked up in two years. In 1958 he did 6,029 lineal feet in a 12 hour day. But 8,036 feet is sheer darn paving genius.

Krushchev, rumor tells us, is biting his not immaculate fingernails and thinking of getting a Butler TX-4 Batching Plant. Swell! But don't worry. Our country is safe. He hasn't Denton's know-how.

Be seeing you

The Butler Engineer
BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

For more facts, circle No. 367

FOR TEMPORARY HEAT
ON ALL WINTER WORK...INSIDE-OUTSIDE...USE

INSTO-HOT

SALAMANDERS LP GAS 4 MODELS

FEATURES

- PORTABLE
- CLEAN
- ECONOMICAL
- NO FUMES
- NO SMOKE
- NO SOOT

BLOWER HEATERS LP GAS 2 MODELS

TYPICAL USES: DRYING PAINT AND PLASTER . . . CURING CONCRETE . . . WORKER'S COMFORT . . . HEATING WAREHOUSES, SHANTIES, SHEDS AND MATERIALS.

INFRA-RED HEATERS LP GAS 3 MODELS

THE MOST COMPLETE LINE OF PORTABLE HEATERS WITH CAPACITIES UP TO 150,000 BTU PER HOUR. BOTH MANUAL AND AUTOMATIC OPERATION. PRICES \$19.50 AND UP.

• WRITE OR WIRE FOR COMPLETE INFORMATION •

INSTO-GAS CORPORATION
996 E. WOODBRIDGE • DETROIT 7, MICHIGAN

For more facts, circle No. 368

Loosens

FROZEN PARTS
FAST!

Handy
Won't
Leak
Shoots
3 Feet

Same formula as famous Kroil that has pleased 14,000 industrial users for 10 years or more. Loosens stuck together metal parts, bushings, bearings, bolts, screws, pipe, etc., "anything from an embalmer's needle to a bulldozer," one customer said. "Like an extra employee," said another. "Turned rust into mush, put \$50,000 equipment back to work." You too can get these results. Try Aerokroil at our risk. Send \$2 cash, and we'll pay postage.

KANO LABS. 1057 THOMPSON LANE NASHVILLE 11, TENN.

15-OZ. CAN \$2
5-LB. NASTAVEL
CAN \$12.50

For more facts, circle No. 369

CONTRACTORS AND ENGINEERS

Product LITERATURE

To obtain free copies of any of the literature described in the following section, circle the designated number on the Request Card at page 18.

Asphalt finishers—a brochure describing two Barber-Greene high-speed, heavy-duty asphalt finishers—the crawler-mounted Model SA-60 and the pneumatic-tire-mounted Model SB-60. Sixteen new features, common to both models, are listed and illustrated.

Write to the Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 43.

Blasting-cap accidents—a poster designed to bring to the attention of users of explosives the importance of accounting for blasting caps so that they do not come into the possession of youngsters. Emphasizes that all caps taken from the magazine should be accounted for at the end of each day, and caps in storage kept under lock and key.

Write to the American Cyanamid Co., Explosives & Mining Chemicals Dept., Dept. C&E, 30 Rockefeller

Plaza, New York 20, N. Y., or use the Request Card that is bound in at page 18. Circle No. 48.

Concrete-shell design—a booklet on engineering design procedure for concrete hyperbolic paraboloid shells. Covers standard, skewed, groined, and sloping HP's.

Write to the Portland Cement Association, Dept. C&E, 35 W. Grand Ave., Chicago 10, Ill., or use the Request Card at page 18. Circle No. 7.

Concrete pipe—a folder on the Fullerform process for casting monolithic pipe on the job with ready-mix trucks. Photographs show the process.

Write to the Fullerform Continuous Pipe Corp., Dept. C&E, 2727 N. Central Ave., Suite 412, Phoenix, Ariz., or use card at page 18. Circle No. 92.

Concrete curing—a pamphlet describing the use of Visqueen film as a curing blanket on concrete slab work for highways, streets, sidewalks,

ALL-NEW HEAVY-DUTY BREAKER



From throttle to tool retainer, this 80 lb. class Worthington Blu-Brute paving breaker is all-new. It takes both spike and sheeting driver. And it's designed to give faster breaking with better operator control and less maintenance.

How? There's more than a dozen improved design features. They range from an easy operating progressive throttle valve to simplify starting moils through to a renewable front head bushing for low cost replacement of the wearing part of the chuck housing. Other features mean less operator fatigue . . . for example, the extended "steel run."

In addition, the WB-82 wears better because of the exclusive Worthington process: Blu-Coated parts.

The Blu-Brute paving breaker line is complete from the 20 through 80 lb. classes. See your nearest Worthington distributor for more information about the new WB-82. Or request bulletin from Worthington Corporation, Dept. 60-28, Holyoke, Massachusetts.



For more facts, use Request Card at page 18 and circle No. 370

Tandem roller—a fact sheet illustrating and describing the Essick Model 410 4-ton tandem roller. Emphasizes such features as low profile, greater stability, more visibility. General specifications furnished.

Write to the Essick Mfg. Co., Dept. C&E, 1950 Santa Fe Ave., Los Angeles 21, Calif., or use the Request Card at page 18. Circle No. 119.

Bucket, rake, canopy cab—literature illustrating and describing the Rockland line bucket and the Rockland rake and canopy cab for mounting on the Michigan line of tractors.

Write to the Rockland Allied Equipment Corp., Dept. C&E, 3788 W. Colonial Drive, Orlando, Fla., or use the card at page 18. Circle No. 101.

Salt as de-icer—a 24-page pamphlet detailing the use and benefits of salt in ice and snow removal. Discusses de-icing properties of salt and the effect of de-icing chemicals in general.

Write to the Salt Institute, Dept. C&E, 33 N. La Salle St., Chicago 2, Ill., or use the Request Card at page 18. Circle No. 20.

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Write to Plastic Films, Visking Co., Division of Union Carbide Corp., Dept. C&E, 6733 W. 65th St., Chicago 38, Ill., or use the Request Card at page 18. Circle No. 12.

Truck scale—an illustrated brochure describing the new Toledo portable motor-truck scale. Lists the many platform sizes and capacities along with several types of weight indication including dial, type-registering beam, and Toledo's Printweigh 400, which provides printed records as well as visual indication. Form 2421.

Write to Toledo Scale, division of Toledo Scale Corp., Dept. C&E, Telegraph Road, Toledo 12, Ohio, or use the card at page 18. Circle No. 17.

Drilling equipment—a bulletin describing a complete line of Gardner-Denver crawler-mounted drilling equipment. Information on drill carriers, drill feeds, and various types and sizes of drills. Combinations of this equipment also are graphically illustrated. Specifications furnished. Bulletin CDAT-1.

Write to the Gardner-Denver Co., Dept. C&E, S. Front St., Quincy, Ill., or use the Request Card at page 18. Circle No. 28.

Warning-device regulations—a booklet summarizing contractors' responsibility for providing safety devices, warning lights, torches, lanterns, and signs, according to the laws of various states.

Write to the R. E. Dietz Co., Dept. C&E, 225 Wilkinson St., Syracuse 1, N. Y., or use the Request Card that is bound in at page 18 of this issue. Circle No. 94.

Concrete admixture—a booklet on Triple Action Trimix, an admixture for concrete and mortar that accelerates hardening, increases early strength, and reduces water requirements. Well illustrated with drawings, photographs, charts, and graphs.

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Bituminous paver—a bulletin on the redesigned Blaw-Knox Suburban paver. Stresses such features as 8-speed transmission, power steering, fingertip-controlled folding hopper, self-power for job-to-job travel, and a free-floating screed. Bulletin No. 2054.

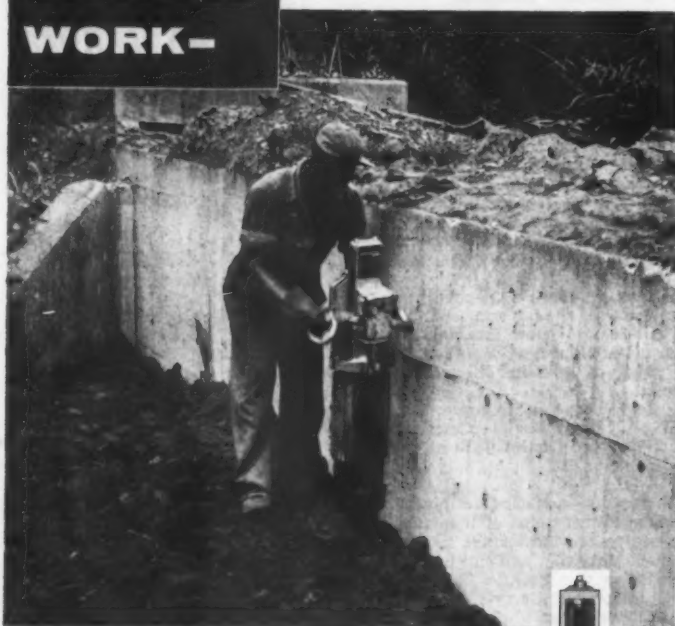
Write to the Blaw-Knox Co., Construction Equipment Division, Dept. C&E, Mattoon, Ill., or use the Request Card at page 18. Circle No. 60.

Heavy-equipment line—a catalog describing the complete line of Michigan construction and bulk-materials-handling equipment. On-the-job photographs show the equipment in action on a variety of projects. Bulletin 150A.

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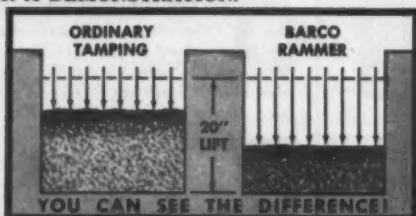


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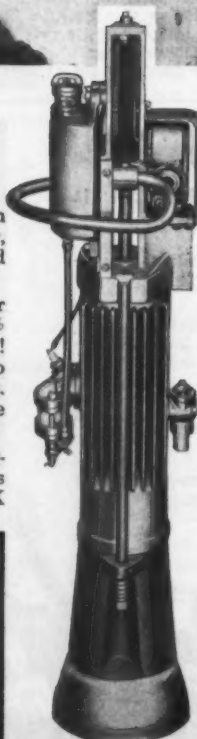
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